

# Computer Weekly

Thursday, November 10, 1983

RECRUITMENT AND EDUCATION SUPPLEMENT

## Should the poachers pay a transfer fee?

by John Riley  
COMPANIES that poach staff should compensate the companies that trained them. This was one of the viewpoints put forward by computer services companies which took part in a recent survey of training needs for the industry.

Over 1,600 computer services companies were canvassed by the survey, conducted by the Computing Services Industry Training Council (Cosit) this summer.

The response identified that there is a strong need for training in all areas except for computer operators and data preparation staff. It also unexpectedly revealed a particularly urgent need for more training in sales and marketing.

"We know how to train analyst programmers but we don't know how to train computer sales people," said Cosit's director, Gordon Ewan, who was formerly a training manager at ICL.

"The Computing Services Association's annual report has already said that the key factor for growth in the industry is the

shortage of trained staff, and our survey has uncovered key shortages in marketing and selling. There is also a shortage of trainers too, skilled people with the ability to communicate their knowledge.

"A lot of unsupported facts and figures about employment needs are regularly bandied about in the

Cosit currently administers grants for companies to train either new or existing employees on behalf of the Manpower Services Commission. This year it has £600,000 available under its Training and Development Plan with a limit of £750 per trainee, and with no one company being

The most rapidly expanding areas revealed by the survey were sales staff, applications programmers and field maintenance engineers - over 60% of companies employing these categories predicted expansion of these sectors.

Around 50% of those companies employing consultants, operation support staff and systems analysts and programmers predicted expansion of their needs in the future.

Although 62% of the companies expected to increase their staffing of applications programmers, 9.8% actually predicted that they would shed staff. A decline in operation support staff was predicted by 7.4% of the companies and 5.2% predicted a drop in their need for systems analysts and designers.



EWAN... "A transfer fee is attractive."

Ewan believes that the money best spent helping to provide short, intensive periods of training combined with on the job reinforcement. At present he only has £600,000 to spend doing this, though there is a possibility of a further £750,000 being granted by the MSC later this month.

panies canvassed, only 81 replied. "It was the companies that are interested in training that replied, so the results will be biased," he says.

## CSA prepares for new Euro attack

by John Kavanagh  
THE UK computing services industry is gearing up for a major assault on Europe following the election of BIS chairman Roger Graham to a top job in the European Computing Services Association.

Graham's appointment as vice-president for two years comes just as the UK Computing Services Association is planning new initiatives to get UK firms into Europe.

It also coincides with new aggression from the French services industry, which is campaigning for more government backing for export efforts (see page 4).

Graham, chairman of BIS' computing companies, is on the UK CSA's international marketing committee, which is determined to make its mark in 1984.

business totalled \$8,100 million while the US market was \$26,400 million - yet the total gross national products are roughly the same," Graham said. "This means there's a lot of potential business to be done in Europe."

The UK's share of the European market was \$1,500 million. Graham said UK exports to Europe had fallen in recent years because it was easier to sell to the US, where there were no language problems.

CSA members probably have more people in the US than in Europe," he said. "A lot of companies have over 100 staff in the US - but very few have that number in Europe."

He added: "UK people and products have a good reputation in Europe - but the number of products sold is not that great."

Clive Telfer, chairman of the CSA's international marketing committee and a director of systems firm AIM, said: "There's always been a CSA committee looking at exports but it's been passive. But now there's new impetus from members."

Telfer's committee also includes Scicon managing director Warren Werblow.

"Through the committee small firms can talk to experienced people like Roger Graham and Warren Werblow," he said. "We will help them by giving an insight into what is involved in exporting and government support."

Other issues Graham will campaign on include telecommunications, data protection legislation and software copyright. He said there was a lot to do on the communications scene.



GRAHAM... Companies have staff in US rather than Europe.

## ITT chases IBM personals

US MULTINATIONAL ITT is going after IBM in the personal computer market. At next week's Comdex show in Las Vegas it will unveil ITT XTRA, an 8088-based micro which will run MS-DOS and much available IBM PC software. Prices should start around \$3,500. ITT has already experienced the business micro market with its 2020 and 3030 machines.

## Tymshare bid

GIANT US aircraft manufacturer McDonnell Douglas is set to buy ailing computer services company Tymshare for between \$360 and \$420 million. The aircraft company's computer subsidiary McDonnell Douglas Automation has the largest civil computer installation in the world and a commercial turnover of over \$300 million a year.

## Natural grant

STANFORD University in California has been given a \$21 million research grant to develop natural language links to computers. The grant, one of the biggest yet made for an artificial intelligence project, comes from the US System Development Research Foundation, and goes to a team of leading US academics headed by Professor Jon Barwise of Stanford University.

## Record breaker

RECORDS were shattered for attendance at last week's Compec, the UK's major annual computer industry show. The figure leapt 14% to 37,342. Around 500 companies, over 50 of them in Software Village, exhibited at the UK computer industry's marketplace, which is sponsored by Computer Weekly.

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## Hero jumps on IBM bandwagon

by Keith Holder  
SMALL systems and communications specialist MDS last week jumped on the IBM network bandwagon with its own personal computer, the Hero, and a family of communications processors.

"IBM has focussed the market for us," said Gerry Meredith-Smith, MDS UK managing director. "What we are offering is a superior product at a cheaper price."

Company president Robert Armstrong said that IBM's 3270 personal computer is a clear sign that office automation "will evolve from the 3270 network. We will be in a position to supply our customers with high performance machines in this environment," he said.

Independent estimates put the price for non-intelligent terminals



MEREDITH-SMITH... "Superior."

in use with this network at three million.

The new machines will support the company's existing software, and are designed to give users access to IBM host computers for running applications programs.

The 16-bit Hero uses high-level languages like Basic and Fortran, and offers graphics, extended disc storage and optional full colour. It runs the company's H/Os operating system.

## US bars Silicon Valley to Soviets

by George Black  
THE computer Cold War froze harder last week when the US State Department made Silicon Valley a no-go area for Soviet citizens and diplomats.

The Russian Embassy in the United States was sent a new map of restricted zones that includes Santa Clara County, California, where many of the high technology start-up firms are concentrated.

A government spokesman said: "We've been trying ever since 1941 to convince the Soviet that travel controls are not in their interest or ours. Our move is a response to their revised list of restricted areas and corresponds closely to it."

American fears of technology espionage have been intensified with the seizure by West German and Swedish customs of two DEC Vax-11/782 minicomputers bound for the Soviet Union. One was intercepted at Hamburg on a tip from West Germany-based US

officials, the other slipped through from there to Sweden, but was halted at Helsinki.

They are thought to have been shipped by a New York firm to its South African affiliate. The South African authorities say they are mounting an inquiry with American help. One report states it centres on a West German dealer named Richard Müller.

The Vax is on the US controlled exports list and needs a special licence to leave that country.

But European governments view the seizures as showing a heavy-handed and unselective approach to the problem of preventing the Eastern bloc from gaining military know-how.

An official of the British Trade and Industry Department said that the Americans would not even listen to their allies on trade policy now.

Several UK industry experts argue that the Soviet aim would not be to capture complete systems

for "reverse engineering", but to buy chipmaking equipment. A more serious instance occurred last year with the alleged disappearance in Paris of one such tool, a Perkin-Elmer Micralign.

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# CAFS goes on all ICL 2900s

by Keith Holder

CAFS with everything is the new order of the day for ICL's 2900 series mainframes. The company's rapid access Content Addressable File Store (CAFS-ISP) will now be a standard feature on all current processors, including a new entry level system it was announced last week.

"I regard it as the turbocharger for the 2900 series. Its speed and ease of use has dramatically improved the price-performance of our mainframe series," said Peter Davidson, the company's business manager for mainframes.



ROUSELL... BT couldn't wait.

The company is also dropping prices on new CAFS systems by between 10-20% compared to last year's prices. The CAFS package has been shrunk from three cabinets to a mere nine circuit boards, since its introduction in 1979, and is incorporated in a new decision support controller. It can address enquiries with up to 16 terms and has a data handling speed of one MByte per second.

The controller can now offer twice the number of connections compared to previous 2900 disc controllers, said Davidson, and control 40 MBytes of disc storage.

Three of these controllers can be attached to a single processor giving a maximum database of 120 GBytes. Existing users can field upgrade their 2900 processors for around £35,000.

Field trials carried out at North Thames Gas gave a reduction time

for file enquiries from two minutes to four seconds, said Davidson. A number of other trials showed an average 60 fold increase in speed, he claimed.

Davidson said that because CAFS used few instructions to achieve this, there was little load on the processor, which allows a smaller system to be used than would be necessary with other manufacturer's equipment. Security for files is provided by the processor system software, if necessary.

Also incorporated into the new systems is a VME-based software facility called Program Master. It is used for developing Cobol programs, and provides facilities for programme creation, editing, compilation and testing.

The newcomer to the range is the 2953, which is available both as a standalone system or as a system supporting distributed applications. Main store sizes of four, six and eight Mbytes are available, and the machine will support all current peripherals.

It costs £180,000 for an entry level system which Davidson said was around £100,000 cheaper than its closest previous equivalent. Like other 2900 mainframes, it uses the VME operating system.

Field upgrading is possible from this machine to the largest Super Dual 2988, without processor "swap out", a unique feature in the market, claimed Davidson. Users can still buy 2900s with the old disc controller, which is cheaper.

The CAFS system need not be confined to either ICL systems or mainframes, he added, though no specific plans to carry out any modifications has been agreed.

One cloud hanging over the company's announcement was its failure to capture a lucrative £32 million contract with British Telecom, to supply a system for directory enquiries.

Alan Rousell, director of ICL's UK operations, said: "We lost the contract simply on timing. BT said it couldn't wait any longer."



LAMB... "This is our second breakthrough in the market."

## Comart wins prize careers contract

by Keith Holder

BRITISH microcomputer manufacturer Comart has won a government contract, worth possibly several million pounds, to supply computer systems to local authority career offices nationwide.

The contract, awarded by the Department of Employment, is connected with the Youth Training Scheme - YTS, formerly the Youth Opportunities Scheme (YOPS). The computers will be used to keep files on trainees and courses, providing easier data handling and to monitor trends in employment.

The Department will operate a scheme whereby local authorities can apply for a voucher to cover 50% of the cost which will be between £3,000 and £5,000.

Comart offer two systems based on eight or 16 bit computers to cater for the differing numbers of trainees to be handled. The smaller system can cope with up to 1,500 files, and the larger up to 3,000, said managing director David Broad. There is also the choice of diskette or hard disc storage.

The Department will have the

final say on which system a particular office may purchase, he added. About three quarters of the orders are expected to be for smaller systems.

Software for the systems has been written by the Department, but the job of installing it will be left to Comart.

The company will also supply consumables and maintain its systems through its eight regional offices.

There are around 400 potential sites, and marketing director John Lamb said he expected a large percentage of these to adopt the systems. The first order has already been received.

"This is our second breakthrough in the market and follows our contract to supply systems for the GP scheme," said Lamb.

Broad said he expected demand for the systems to come in quickly, reaching a peak around the end of this year.

He said that this development provided "another stepping stone" towards supplying similar systems to the Department of Health and Social Security. If successful, this would provide orders for some 2,700 systems.

## Centre improves communications

by Keith Holder

EASIER communications using computer terminals is the aim of the new communications centre, launched last week by Argon and endorsed by John Alvey. It allows messages to be sent or received from other terminals, including those of other manufacturers, in an open system which gives anyone connected to the system access to its text and graphics databases, according to company chairman John Pearce.

Even a keyboard is not essential, he added, as messages can be handwritten using a lightpen or graphics tablet.

"It is a very exciting device, and will do a lot to open up this type of communication to a wider range of people," predicted John Alvey, British Telecom's (BT) director of development and procurement.

BT has had the system, called Excom 100, on trial along with British Gas as part of a development programme including office automation and communication between senior executives.

Connection to terminals on other networks is possible, using a separate modem link, using software emulation techniques.

The software is menu-driven, leading the user through prompts on the screen which can be selected by either the keyboard or lightpen. Modification to the communication channels are made through the keyboard.

This allows data transmission rates and databases to be selected which can then be regenerated through the menu. Security from tampering with these parameters can be achieved simply by unplugging the keyboard, leaving the user to select pre-set options with the light pen.

"Doing away with the need for entries to be made with a keyboard will help to take away some people's fear of using this type of system," said managing director Anthony Chandor.

The system, comprising a colour screen, keyboard, controller and light pen, cost £3,500. A graphics tablet may replace the pen.

The division will come in direct competition with British Telecom Enterprise, which recently appointed Colin Cook from Rank's Zynar subsidiary, as its new chief.

Week's successor is Gail Shaw.

Since 49% of the firm was sold off by the government in November 1982, it has proved extremely successful.

Results for the first two years in the private sector were beyond the best City forecasts (see page 11).

The government has recently announced that it intends to have its remaining stake in the company as it limbers up for the contest with BT.

While the battle for phone customers takes place between BT and Mercury, jointly owned by Cable and BP, BT Enterprises will be slogging it out with Cable's VANS division.

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## Cable forms division to fight BT

by George Black

CABLE and Wireless has undergone an organisational shake-up and formed a new value-added services division, in preparation for the struggle with a private sector British Telecom.

In the reshuffle, Chris Webb, former head of Cable's minicomputer maintenance arm, became European regional director and new post at the head of the value-added services division is given to John Carroll.

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## ACT turns East to save Sirius

by John Kavanagh

BIRMINGHAM-based ACT is to protect its interests in the UK's best-selling business microcomputer, the Sirius, by getting it built by a partly-owned subsidiary in Hong Kong.

This emerged last week as Sirius manufacturer Victor Technologies reported record losses of \$37 million in its third quarter. Victor's founder, Chuck Peddle, has stepped down as president and chief executive and a financial troubleshooter has been brought in to sort the company out.

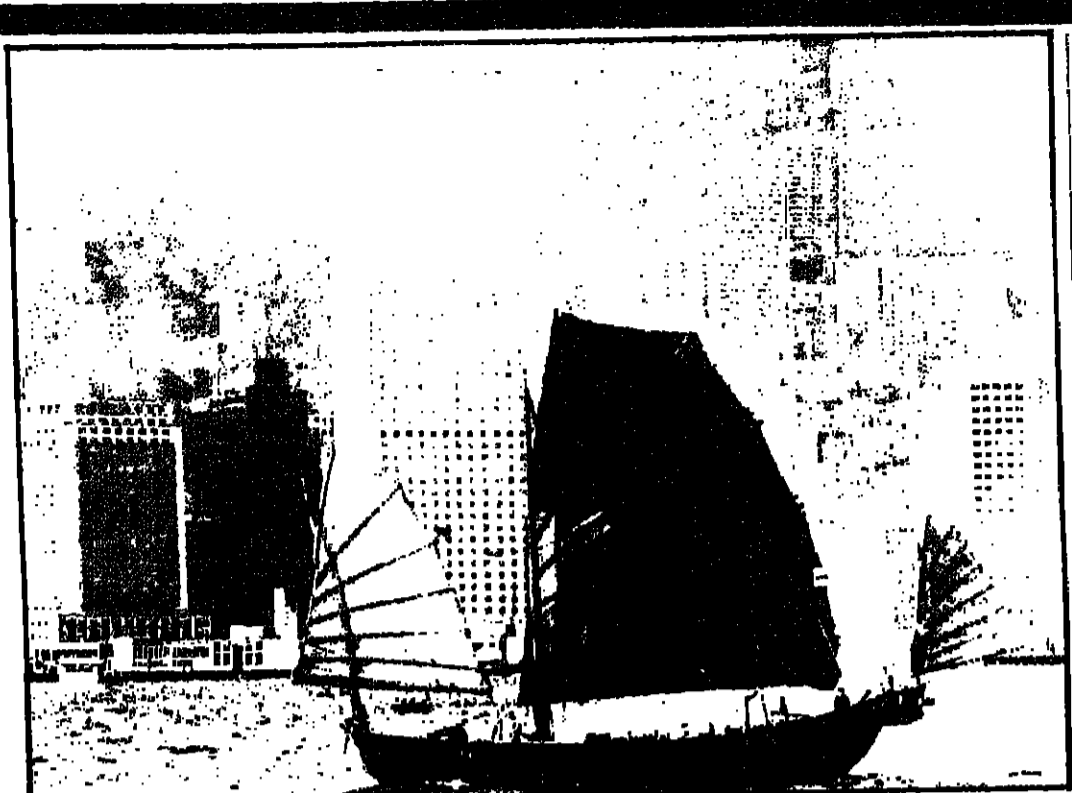
Meanwhile, ACT, Victor's biggest customer, expects to distance itself even further from the company by signing up "a major US distributor" this week for the ACT

Apricot microcomputer. Originally Victor was to be ACT's US outlet for the machine.

ACT's Hong Kong company, Swire Systems, is jointly owned with a holding company, Swire, part of the diverse Cathay Pacific group. It was formed two years ago to sell ACT systems in the Far East and contributes 3% of ACT's turnover.

"Swire Systems is talking to Victor about building the Sirius," said ACT marketing manager John Leftwich. "We're keen to have a second source and we're using our muscle as Victor's main customer to back the negotiations."

Earlier ACT was talking about building the Sirius itself. Leftwich said it had "cooled" on this idea.



Hong Kong... Home of Swire Systems, which could soon be making the Sirius.

The company has taken more orders than expected for its own 16-bit Apricot, and it aims to double production at Glenrothes in Scotland from the present 2,000 to 4,000 a month early next year.

Peter Davies, ACT managing director, now expects to sell 40,000 machines in 1984. Victor's third-quarter slump followed losses of over \$11 million in the second quarter. Revenues were \$46.1 million. Debts stand at \$90 million. Victor has called in a venture capital and company rescue specialist Michael Falcetti in the US and Werner Kraus of Olympia Werke in Europe.

## Olivetti in major re-shuffle

by Keith Hunter

OLIVETTI has reorganised its UK marketing operation as it takes a second stab at the IBM plug compatible mainframe (PCM) market.

Key changes involve the formation of a specialist product group and the recruitment of a specialist sales force.

Jeff Evans, the company's manager for PCM products, said that a staff of 11 would eventually serve the UK, and eight had been recruited already. They will concentrate only on this product range, he added.

"In the past, we tried to cover a wider product area with the existing sales force which led to a lot of administrative problems and ultimately caused a drop in sales activity," said Evans.

For three years the company has sold machines manufactured by Hitachi and IPL, aimed at the IBM 4300 and 308X market but has made little headway with the UK. The majority of existing sales have been for IPL machines and Olivetti has a 30% stake in the company.

## Intel expects problems in doubling personnel

by Caroline Burgess

INTEL, the US microprocessor maker, is to double its UK workforce at its Swindon site by 1986. But it is anticipating problems in recruiting staff.

The majority of the 270 new jobs are for experienced electrical engineers. A spokesman for Intel said: "They are not easy to find. There is a shortage of good professional engineers and there are a lot of companies looking for them."

Intel began its recruitment drive this month with an "open evening" in Bracknell. It plans similar evenings in different parts of the country, backed up by newspaper and radio advertisements, next year.

So far the response has been poor. "We are planning a two-year build up but it will be a very expensive campaign," said the spokesman.

Peter Harverson, Intel's UK regional manager, said: "We want

top calibre engineers experienced in microelectronics, who are looking for a challenging and rewarding career in high technology sales or sales support."

According to Harverson, Intel has increased its sales by 50% this year, despite the recession, and is expanding to meet the demand. It will also be expanding its building space.

"Our business is undergoing a major expansion with a very high demand for our products. The UK leads in many fields of computer technology and I can report that in the UK recovery, in this area, is well underway," said Harverson.

The Swindon site is responsible for marketing and support of Intel products throughout Europe. Intel decided to centre its European expansion at the UK site last year, with plans to eventually create up to 1,000 new jobs.

According to Intel, this plan is "going to schedule".

## Thorn-EMI lands major US order

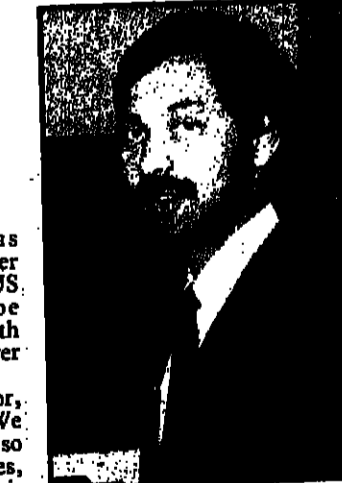
by Donald Kennett

THORN-EMI Datatech has landed a £10 million OEM order from Hewlett-Packard in the US for half-inch streaming tape drives. The deal could be worth £30 million to the company over the next two years.

Datatech marketing director, David Huntington, said: "We have signed six US OEM deals so far, mostly for start-stop drives, but this is by far the largest. It is also unusual for a non-US manufacturer to get an order of this size in the US."

Data products director Dr Duke Ebenezer added: "The range has been launched two years and we have been shipping to the US since January. But we are particularly proud of this order because Hewlett-Packard is extremely quality-conscious, and this is possibly the biggest order in the world for streaming tape drives."

HP has chosen the top model in the range of three. It streams at 100 inches-per-second and "does true start-stop (with no repositioning after a stop) at 50ips. It also has an 800 bit-per-inch NRZ (non-return to zero) format option as well as the 1,600bps P-B (phase-encoded) format that is the standard for IBM-compatible tapes."



EBENEZER... "Very proud."

The drive is available now with HP-3000 series business computers. Early next year it will be available with HP's larger scientific computers. H-P may also be interested in the other models in the range, one of which is claimed to be the world's smallest half-inch streamer.

Huntington said: "These are the best products of their kind in the world. It's unusual for a British company to be able to say that. Real growth is starting now after 18 months' evaluation by OEMs."

"Data communications has been the biggest side of Datatech's activities, but now we see the data products side (tape and disc drives) as the growth area for the future."

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## by Nuala Moran

Each company takes a basic offering and adds the necessary

Manufacturers have belatedly found out that it is software that sells hardware. This explains the recent agreements of IBM with

The requirement for different skills and knowledge means that all companies need to have a sub-contractor capability. Gibbens said: "We need to be like the civil engineering industry. The industry doesn't have the breadth of disciplines it needs to solve every problem so it has to go out and find them."

## by Jack Gee

Dellis says: "There is still a strong preconceived idea that only hardware can be sold abroad. However, by 1990, software's share of costs in computer systems will account for 90% of the total cost."

Dellis stressed that France's software industry is not seeking cash aid from the government but was only asking it not to put spoke in the wheel of computer service suppliers.

## by John Riley

steady rise. The number rose from 4,280 in 1981 to 4,345 in 1982 and last year 4,473 school-leavers applied. Comparable figures for electronic engineering are not available. "Universities mi-

## by Donald Kennett

month that the main parts of SDL were available now in draft form and would remain substantially unchanged when published by CCITT next year.

Similar concepts and tools have been used in the development of System X in the UK. But since most of the work has been done to

## Building society links its branches

US airforce. The system will be installed at the Ramstein Airforce base in West Germany.

AN order for £250,000 worth of Ampex DFR disc drives has gone to distributor Quest International. The drives will be used in the Miccos and Optim ranges of mini/microcomputer systems.

## STC joins towns

STC has won the order to install and commission the 140Mbit/sec optical communications system that will link Birmingham and Bristol, completing the southern end of the figure-eight trunk network being constructed by Mercury Communications, a private telecoms company. Meanwhile Plessey will launch 565Mbit/sec optical fibre system between Nottingham and Sheffield for British Telecom. This brings the value of Plessey optical fibre contracts with BT over £3.3 million.

**ORION** Royal Bank, part of the Royal Bank of Canada Group, is buying \$227,000 worth of Data Link P1S intelligent terminal systems for the dealer departments in 14 City offices. The system will consist of 32 workstations, with 16-inch monitors, each station having two or three screens. The workstations will be linked to Orion's 3033 mainframe.

## System order

## System Order

ONE of the first US customers of Data General's comprehensive electronic office (CEO) system is chartered accountant Morison & Neham, which has placed an order worth £90,000 with MG Systems, one of Data General's largest OEMs. Another Data General OEM, CAD/CAM specialist McAuto (UK), of Woking, has won an order for an IBM MV10000 from Ricardo Consulting Engineers.

## Assemble a deal

AN assembly contract, worth £150,000 over five years has been won by CVO Electronics of Slough to assemble the Cambridge Systems Technology (CST) Procyon IEEE controller for BBC Micro. CST used its own manufacturing, but had to outsource due to the growing demand for Procyon.

## Crav to Berlin

A GRAY system worth \$5.5 million will be installed in West Berlin at the beginning of 1984. The machine was chosen by the Ministry of Science and Research for the Free University and research institutes in West Berlin. Applications running on the system will include engineering and weather modelling.

## Guernsey insure

THE States Insurance Authority in Guernsey has just taken delivery of a system to automate the calculation, payment and control of Social Insurance Benefits. The system, which was developed by the CAP Group, runs on an IBM29 computer.

**If you can do this job  
in less code than  
we can in Transbasic**

# Interview

**COST EFFECTIVE "INTELLIGENCE"  
FOR "DUMB" TERMINALS**

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# ANALIST

List Management  
Package for  
UNIX Systems

**Sinclair wooes BBC on micro**  
by Caroline Burgess

HOME computer giant, Sinclair, is aiming for a second bite at the BBC's microcomputer contract when it comes up for renewal next autumn. It is also keeping a watchful eye on attempts to launch an ITV equivalent.

Sinclair has written to the BBC asking if the contract will be put out to open tender, and requesting details and specifications for any proposed new machine.

"We are expressing our interest in the contract and asking the BBC what is going on," said a Sinclair spokesman. But as yet we have not received any reply.

Acorn hold the current contract with the BBC, but the company has expressed dissatisfaction with Acorn and with the BBC's attitude. "We have no intention to move," said a BBC spokesman. "There is no reason for a change."

Meanwhile the Independent Television companies are investigating the possibility of an ITV micro and have submitted proposals to the Independent Broadcasting Authority (IBA), ITV's regulating body.

"Discussions are continuing but no decision has been made," said David Shaw of the Independent Television Companies Association. "We have to wait for a response from the IBA."

All the individual companies are

**Assemble a deal**

AN assembly contract worth £150,000 over five years has been won by CVO Electronics of Slough to assemble the Cambridge Systems Technology (CST) Procyon IBEE controller for BBC Micro. CST used its own manufacturing, but has moved outside due to the growing demand for Procyon.

# ing Computer Manufacturer.

# Is an electronic brain imminent?

by John Riley  
BRAIN cells on a chip could be the logical outcome of the impending marriage between biotechnology and computer technology. That was one of several futuristic views put forward last week by computer industry prophet Earl Joseph.

Speaking at the annual Pergamon Infotech state of the art review in London, Joseph argued that nature has already solved the problems of packing extremely high level integration into DNA enzymes, and that computers can use those circuits even though we do not understand yet how they work.

"By cutting out the brain part of DNA and defining it as one bit of memory, you can reach the smaller geometry needed to get self-manufacture for intelligent systems without learning first how to design it," said Joseph, who is president, planning and development for the US consultants

Antipatory Sciences Inc.

He claims that there are unlimited possibilities. "An example is that at present image recognition is not efficient with computers - but if you could cut and splice that part of the DNA code which deals with image processing and put it in a robot, it would solve the problem. Biochips, or monoclonal antibodies, would enable you to grow computers rather than manufacture them."

Joseph, who formerly designed computer systems for Sperry, points out that the US military is very interested in biotechnological research.

As well as looking to the more distant future of bio-chips, Joseph sees present dangers in "computer wars" and in Luddism by DP managers.

"The real danger to the computer industry in the US from Luddites is from people who manage the computers and not the users," he warned.

"Data processing managers are getting frightened because there is a lot of de-skilling going on. It's slowly dawning on them that they are no longer supplying computer power and services - they are switching to becoming consultants."

The Luddism going on at present is both at the sophisticated level and also at the "axe in machine" level, he said.

The wars he talked of are the war with Japan; the war being waged on everybody by IBM, especially since its release from the US anti-trust suit; and the war in the microcomputer world.

However, Joseph did not offer only gloom and doom. He pointed out that the future is nearly upon us, with first steps already being taken to produce smart machines, talking and listening chips, computer systems on a wafer, and applications programs on a chip.



JOSEPH... "Luddite managers are the real danger."

## CAP buys itself some education

by George Black  
UK SYSTEMS house CAP going into educational computing buying \$100,000 worth of Applied Systems Knowledge West London.

ASK, which develops software for micros in schools, has extra shares to give CAP stake in its operations, and give up any existing shares.

CAP's business director, Harley Atkins, commercial branch manager, Elson, will have seats on board. But Atkins says only be helping them in policy, not taking over the day running of the company. He said he anticipated educational software would grow faster than systems in general over the next few years.

"We've only been scratching the surface up to now," he said. ASK is expected to raise £500,000 during 1984, the whole market sector could be £1 million next year.

ASK has had exports to Australia and New Zealand, Africa, the United States and Far East.

## Zygal steps into the OEM unknown

by Claire Gooding

A MULTI-MILLION dollar agreement with US manufacturer Convergent Technologies is bringing UK printer and communications specialist Zygal Dynamics into new territory.

Zygal is entering the OEM business, "adding value" to Convergent Technology N-GEN machines with its own communications and print products.

Zygal is hoping to get in on the boom area of distributed processing. "We are looking for users who want networks at a personal computer price," explained Desmond Flynn, managing director of Zygal Dynamics. "Typically, the people who are after a 10 or 15 personal computer clustered workstation would be interested in the kind of system we will be building."

The company regards the agreement with Convergent as "quite a coup" since its hardware is also OEMed by Burroughs, Prime, NCR and Gould-SEL.

Zygal plans to build "turnkey hardware", matching the specific requirements of customers by adding various other products to the N-GEN. It will address its familiar territory of banking and financial users, but also look further afield,

hoping to take advantage of lively interest in distributed processing triggered off by own Personal Computer.

One of the unusual features of the N-GEN's native CTOS operating system is its ability to manage industry standard operating systems MS-DOS and CPM multi-tasking systems. It is able to run 15 or so CPM applications but running only one and one printer.

"There's been a lot of interest in Concurrent CPM and multi-tasking, and people have been about MS-DOS having the capabilities. Effectively, there already with CTOS Flynn.

CTOS handles the distributed processing in such a way that several users can be accessing a single database without being aware of each other. It is effectively a "driver" for peripherals, while the user is only aware of using standard CPM or MS-DOS.

Zygal, which took over McNulty's communications and Modular Technology when it crashed last year, is putting its emphasis on communications in the new venture.

## Micro Eclipse fills gap

by John Riley

US MINICOMPUTER manufacturer Data General this week brought its new micro-Eclipse based system to Europe. Launched last week, the C/30 is designed to fill the gap between its business microcomputer and its MV4000 minicomputers.

The system is a commercial version of the S/20, but also offers a commercial instruction set, floating point accelerator and micro burst multiplex channel.

The C/30 is a 16-bit system which supports from five to nine users, and offers up to two Mbytes of main memory and 150 Mbytes of disc storage.

It runs all Data General's software, including the AOS (Advanced Operating System), RIOS (Real Time Disc Operating System) and MP/AOS (Multi-Programming/Advanced Operating System) and also the Comprehensive Electronic Office.

The C/30 is a two significant improvement on the S/20, which was launched in the UK last year.

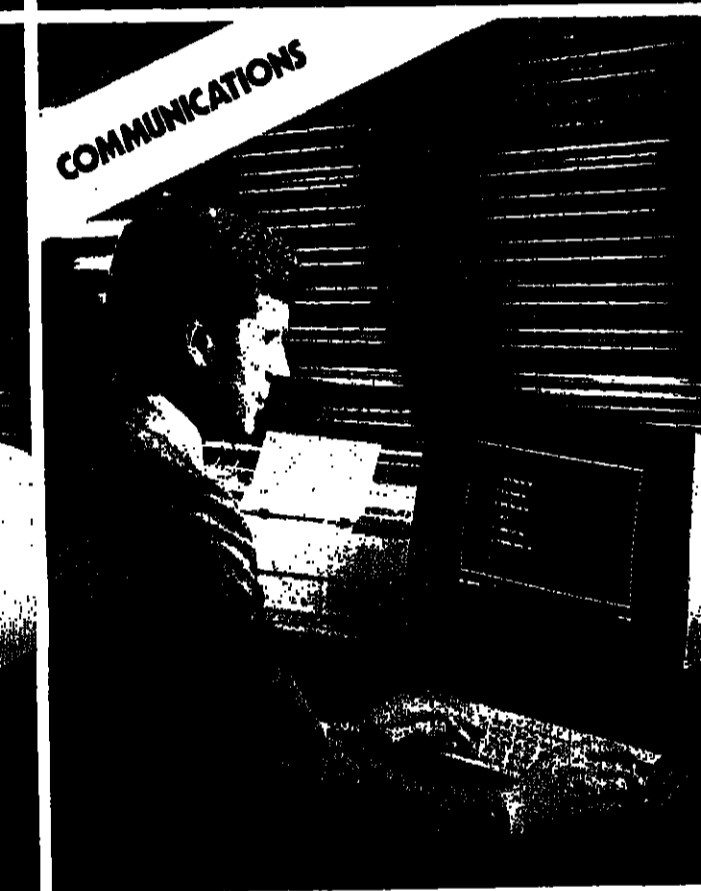
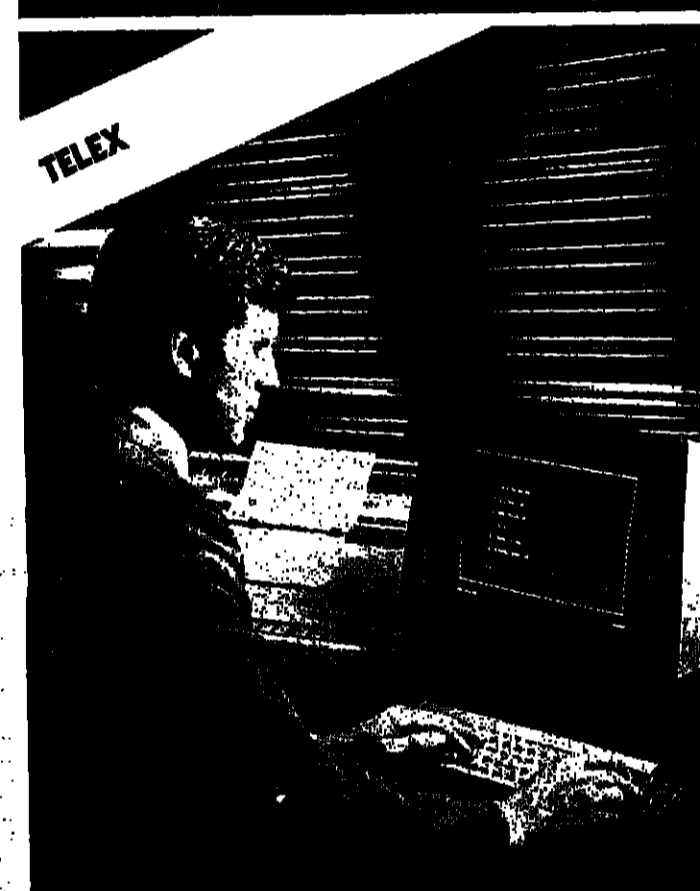
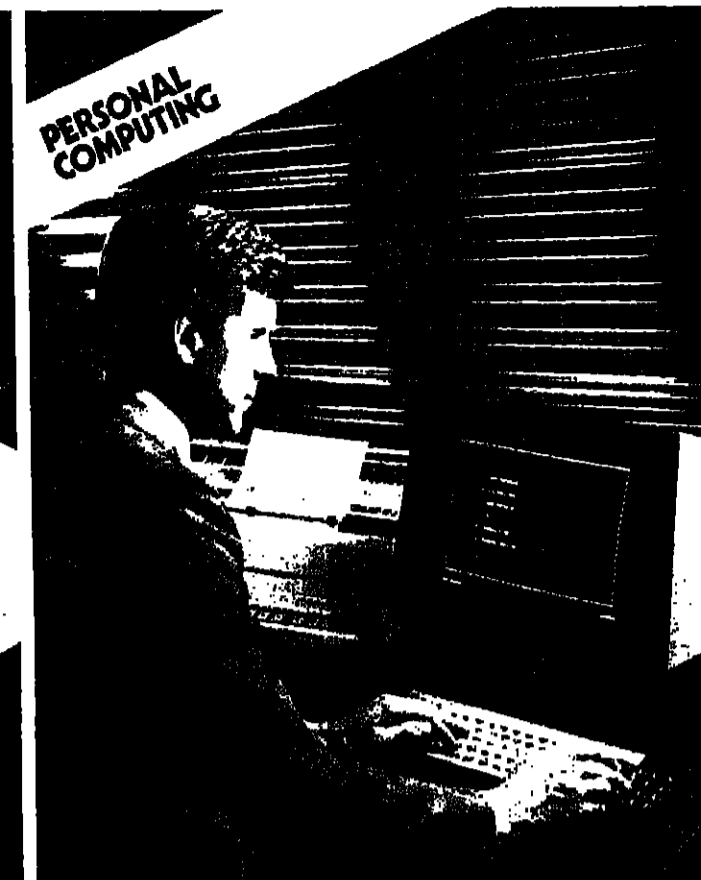
information systems. "Firstly it is information systems in large organisations, for use in applications such as inventory management and secondly, for the small business user who traditionally bought the CS range in the 1970s."

The price for a typical configuration, including the C/30 with half a Mbyte memory, 50 Mbytes disc, cartridge tape back-up, multiplexer, console, Microbus and operating system license together with software credits is £27,016.

The entry level half Mbyte C/30 processor alone is £8,240. Deliveries are expected to begin in February.

Data General also intends to back IBM document interchange standards. It is to offer IBM's Document Interchange (DIA) and Content Architecture (DIA/CA) on its CEO when they are published.

Last week Data General announced in the US that it is agreed to develop interfaces with three IBM manufacturers, including the Robot, in the UK.



## Northern Telecom, the great all-rounder in DDP and communications

Distributed Data Processing is our business; communications our strong-point.

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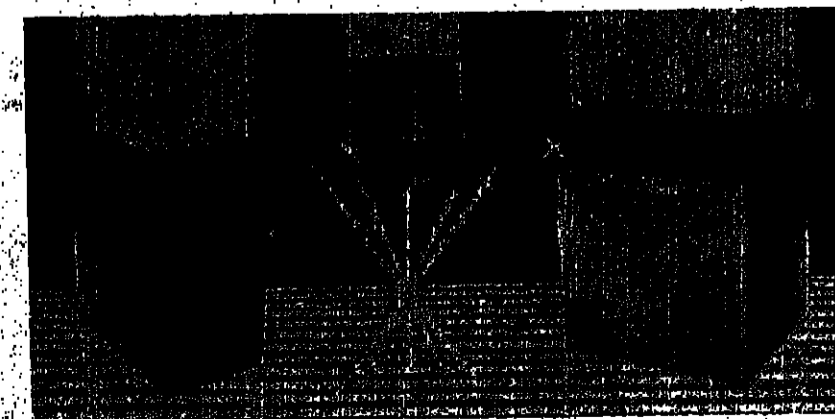
Compatibility is our watchword - from hardware, software and communications, to the way you use them. Our versatile range of systems allows you to build and develop a network to suit your needs and run your business more smoothly and efficiently.

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Where computers and communications meet

# Telecomms is on a collision path

by John Riley  
THE fast-moving computer industry is about to collide with the plodding telecommunications industry, and a shake-up is inevitable.

That view was put to Pergamon Infotech's annual state of the art conference last week by John Burren, head of information systems at the Rutherford Appleton Laboratory.

"The telecommunications industry has not kept pace with the computer industry," he said. "The computer industry is in excellent shape, but although communications has spectacular technology, it is not so healthy organisationally."

The question is: will communications providers supply all the equipment to go on the end? That is difficult for a State monopoly: they either keep communications suppliers boxed in or let them

compete, in which case they lose the monopoly," he added.

"In the UK the argument is polarised on who owns what, but that is not the major question. The question is how it is organised and divided up."

From a technical or economic point of view the organisational structure of the communications industry had to move towards that of the computing industry, away from State administration towards competitive business.

Burren, who heads the Project Universe experiment in high-speed, packet-switched networking, drew attention to the two new transmission technologies, optical fibre and satellite transmission, and to developments in electronic switching.

He cautioned against too much reliance by communications companies on the 64 Kbits/sec rate

chosen for digitised voice networks. "One has the feeling that too heavy building in of 64 Kbits/sec would be a mistake. Computer people will see warning parallels with computer architectures having address ranges of 64 Kbytes."

Burren also had some reservations about the International Standards Organisation's Open Systems Interconnection standard reference model for the exchange of information between systems.

He argues that the model was proposed before satellite transmission technologies developed, and that it and its associated proposed standards do not allow for changes in the application of technology, do not allow for high speed information transfer, and do not cater for voice.

Project Universe, which is completing its first phase, a network which linked 150 computing de-



BURREN... Reservations about the Open Systems Interconnection.

vices and 12 Cambridge Rings in seven centres to an orbital test satellite via six satellite bridges.

The next phase of the project, currently being drawn up, will involve an experimental service using British Telecom's 2 Mbits/sec digital point-to-point service Megastream. The Alvey Programme is to look after the research aspects of that phase. Logica, GEC and British Telecom have formed an informal consortium to bid the technology.

## NCC offers guidelines to first-timers

NATIONAL Computing Centre offering guidelines for first-time micro users through a subcourse service costing £14.50 a year.

The fee includes a 50% discount on half-day seminars and 10% of training courses run by the Centre's Microsystems division.

## 23 more shops

W H SMITH has opened 23 new in-store computer shops, taking a total to 30. The first three were opened four months ago and five more were added in October. The sell a range of microcomputers, Acorn's BBC and Electron.

## Singapore plant

MOTOROLA is to build a manufacturing plant with research and development facilities in Singapore. A statement by the company's Illinois office said the factory at Ang Mo Kio will make communications equipment.

## Call for tariff cut

A REDUCTION in the 17% tariff on semiconductors, to bring it in line with the 6% tariff on computers, has been urged by the Electronics Economic Development Committee. A stage proposal has been sent to Kenneth Baker, Minister for Information Technology, asking the government to campaign for an immediate reduction to 10% at the EEC's annual meeting on tariff in January.

## Dealers named

ABS COMPUTERS, the UK minicomputer manufacturer, has extended down into the microcomputer market with a Orb machine, last week appointed two distributors: London-based Minnie Enterprises will sell the Orb to the financial market and Satellite Computer Systems will set up a dealer network for the South of England.

## Most was negated

IN last week's review of R. N. Teshey's *Principles of Test Planning*, our reviewer, Richard P. Smith, wrote of the Status data management package: "It is a useful in large organisations dealing with tens of thousands of articles, scientific abstracts, technical reports and so forth. 'But an error this appeared as: 'It is useful. . .'. We apologise to all concerned."

## French job places may shrink

by Jack Gee

A FALL in jobs available for high technology engineers in France could cut recruitment by between 20 and 30% in 1984, according to the Association of Electronic and Computer Engineers.

The association says the job crisis reflects the precarious state of the French economy, which is undermined by domestic recession; inflation, which will top 9% for the current year; and rising unemployment in most sectors of industry.

Computer and electronics companies are likely to seek higher productivity from staff already on their payrolls, rather than recruit new personnel for expansion projects.

The engineers association says that, following a government campaign to encourage early retirement, many white-collar veterans were replaced in 1982 by engineers hired for their first jobs. Very few experienced top-level staff were taken on.

This year, firms in the electronics and computer industry have slowed down recruitment of youngsters and have sought primarily to give themselves new muscle by attracting engineers with proven records. They are being hired for research and development and for marketing activities.

Although most beginners have until now found a first job within a month of graduation from college, this search period is likely to become increasingly longer, according to the association.

Young engineers risk taking three years to find a first job. Higher specialisation by French computer and electronic companies is emphasising the need for engineers with long experience.

The biggest shortage, says the association, is among engineers working in power electronics. Half the jobs advertised cannot be filled, the association says, because the colleges are not turning out specialists in this field.

Recruitment problems are also reported by firms seeking optoelectronic engineers.

## Schools can run exams with help of free software

by John Riley  
FREE software is to help over 500 schools administer their O and A level exams this year.

The software, designed and written by the University of Oxford Delegacy of Local Examinations, allows schools to enter details of examinees and the exams they are taking on floppy disc via their micros. The floppy discs are then sent to the examining boards HQ and read into its CTL 8046 computer.

Everybody stands to gain from the arrangement. If schools' part, each candidate gets a 25% reduction in exams fees, schools save on administration and do not need to calculate exam fees, and the examining board saves on clerical work involved in batching and checking entry forms.

The package, written in Basic, is tailor-made for each of the main micros currently in use in schools, including Acorn's BBC Micro, Research Machines' 3802, and Commodore and Apple machines.

"It encourages schools to use the micros they've got," said Paul Humphreys, deputy administrative officer to the board. "We have written the software in Basic, so that it can be used for teaching as well as administrative purposes."

A pilot scheme was first run with three schools in the autumn of 1982. Over 500 schools have now asked to take part, according to Humphreys.



PICK... "The aim is to de-mystify using the computer."

# Brakes come off Pick in Europe

by Claire Gooding

THE brakes are coming off the Pick operating system in Europe, now that Pick Systems has declared an open market. The restrictive licensing agreement between Pick System and French manufacturer Intertechnique is not due to come to an end until August 1984, but Pick has already thrown open the arena for other manufacturers.

Dick Pick, author of the multi-user system, revealed in London last week that from December 1 the French licensee would have to sell against US manufacturers.

"Pick Systems has given up a portion of its royalties to enable its current licensees to go into the European market. By the same token, Intertechnique is now free to sell its systems to the world."

The contract with Intertechnique has meant that sales of the Pick operating system have been severely restricted in Europe. In France only buyers of the In-

tertechnique Multi-6 have had access to Pick's increasingly popular system, and Intertechnique did not take advantage of its position to push the Pick system into other European countries.

The rash of new low-cost systems using Pick's OS and its inbuilt relational database has fanned the flames of Pick enthusiasm to the degree that US manufacturers, such as General Automation, Ultimate, ADDS and Perce, have been clamouring for their share of the European market.

Richard Jowett, managing director of Sheffield-based BDP, confirmed that he had been tipped off as UK distributor for ADDS Mentor. "We are poised to move into Europe and have already been talking to dealers in France. There's a huge market there and we're ready for it."

The prevailing opinion among suppliers of Pick-based systems is that Intertechnique has "sat on"

the system, when it should have made it available on other kit. Rumours flew around Comdex Europe that Pick had written to suppliers telling them to gear up for sales in Europe, and not be too concerned about treading on Intertechnique's toes.

Pick denied that there was any bad feeling between the companies.

Intertechnique director Edward Marchegait's only comment was that the company was negotiating a new contract with Pick.

The whole system has been restructured so that it can support other operating systems, such as Unix, as a subset of the Pick software. "There are also improvements in user interface."

"The whole aim is to de-mystify using the computer for end users," said Pick. "To my way of thinking the next step is voice recognition."

Win £1,500 in Pick competition - page 25

## £420,000 invested in software firm

by Dave Madden  
TWO British institutions have put £420,000 into Assyst, a software and services company, for a 35% stake.

Commercial Union Assurance and Baker Street Investment Company (Basic) will each have a 17.5% holding in the company.

Assyst is the holding company for Assyst UK Computer Services, a wholly-owned subsidiary of Assyst-RAET, based in Holland.

Jell Wallace, Assyst marketing director, described the UK company as "a multi-service vendor,

supplying everything from junior programmers to senior business consultancy and project management". In effect Assyst is a Hewlett-Packard OEM but it handles Data General kit too.

The Assyst-RAET group employs some 650 people, of whom 60 are based in the UK. It predicts turnover of £25 million in the fiscal year to December 31 against £20 million last time. Assyst will contribute about £1.5 million, and is looking to triple that figure by 1985.

Managing director Theo Bosman said the company needed the

cash "to increase our services, develop new products, and acquire systems houses".

When Assyst goes on the acquisition trail it will have two basic criteria: one is geographical - the moment the company has four offices, in Leighton Buzzard, Washington, Livingston, and Aberdeen - so it will look for a systems house in the Midlands or North-west.

Similarly it wants to bring new skills into the company - either by buying a vertical market specialist, or an outfit with Wang, or IBM System 38 experience.

## Tandon allays fears

by Keith Holder

NEW quality control procedures have been adopted by disc drive manufacturer Tandon International in a bid to allay fears about its product quality. This follows severe criticism and a £10 million lawsuit from Torch Computers over deliveries of faulty or incomplete drives.

"We admit there were serious problems," said European general manager Bruno Kaelberer, "but rather than sit around we have done something about it."

From August this year the way the company deals with product

quality has changed. Instead of each division operating independently, all European centres come under the direction of a central manager.

Kaelberer said European sites had now improved test equipment and were able to carry out mechanical and electronic testing and repairs without having to rely on the US parent.

"We are aiming for zero defects in our drives. No one is that good, but we expect to get close. Our problems started because we had so many orders and were shipping a huge number of products."

## Sord launches 32-bit challenge to Vax in UK

by Keith Holder  
JAPANESE micro manufacturer Sord Computer Systems has launched in the UK its first 32-bit machine, which it claims will outperform minicomputers like Digital Equipment's Vax.

The M685 uses two Motorola 68000 processors and a four Kbyte cache memory to achieve processing speeds up to 1.25mips.

"We see this as a breakthrough in performance levels for microcomputers," said UK general manager Michio Yamada.

The machine has sold well in Japan since its launch in May, with orders for over 1,000 units.

The British market, though different, could produce the same results, said Don Carter, deputy sales manager.

Although the machine will be offered to all sectors of the market, he saw the main emphasis to be on software houses, scientific establishments and universities. The latter would be attracted by the price tag of £16,500 for an entry level system, said Carter.

It will run Unix software and support high level languages, making it suitable for use as a development tool, he added.

It is designed to expand into a multi-user system, and can have up to 12RS232C ports. Networking facilities through the company's own network or X25 wide area systems is provided.

A 32-bit data bus allows access to all memory for high performance direct memory addressable peripherals.

The machine uses Sord's Unos

operating system, which supports Unix and is particularly suited to multi-user systems, said Carter. It offers real time file access facilities, background tasking and context switching.

In addition, for applications like CAD/CAM, there is an optional high resolution colour graphics terminal with built-in Sord graphics language, and a colour vector printer.

The hardware design for the machine was carried out by the US-based Charles Rivers Group.



YAMADA... Breakthrough.

## 16-User Simultaneous CP/M-80 and CP/M-86

The ACCRON - Multi Processor System - architecture has one service processor and up to 16 8088 and/or 8086 based user processors. Each has high speed (7.5MIPS) access to the shared resources such as disks, tapes and printers. The main features are:

- \* All standard CP/M-80 or CP/M-86 software will run simultaneously without modification.
- \* All systems can be field upgraded by simply adding more slave processor boards.
- \* 280A based slave processors run CP/M-80, have 64KB RAM, 2 serial ports, 1 parallel port.
- \* 8086 based slave processors (8087 optional) run CP/M-86, have 128KB RAM, 2 serial ports, and memory can be expanded to 896KB.
- \* Comprehensive multi-user file management supports file and record locking.
- \* Automatic print spooling, system printers, local printers and micro-processor communications are



Fully supported:  
\* Field proven with over 100 installations.  
\* Home Use (no fee).  
\* NHS Local Authority.  
\* Many multi-user software packages are implemented including multi-user Omnicron Management Software.  
\* Taylor Micro Manufacturing Software.  
\* Dataflex and DBASE II.  
\* Local range of microcomputers based on 8.25, 12, 16, 32, 48, 64, 96, 128, 192, 256, 512, 1024, 2048, 4096, 8192, 16384, 32768, 65536, 131072, 262144, 524288, 1048576, 2097152, 4194304, 8388608, 16777216, 33554432, 67108864, 134217728, 268435456, 536870912, 1073741824, 2147483648, 4294967296, 8589934592, 17179869184, 34359738368, 68719476736, 137438953472, 274877906944, 549755813888, 1099511627776, 2199023255552, 4398046511104, 8796093022208, 17592186044416, 35184372088832, 70368744177664, 140737488355328, 281474976710656, 562949953421312, 1125899906842624, 2251799813685248, 4503599627370496, 9007199254740992, 18014398509481984, 36028797018963968, 72057594037927936, 144115188075855872, 288230376151711744, 576460752303423488, 1152921504606846976, 2305843009213693952, 4611686018427387904, 9223372036854775808, 18446744073709551616, 36893488147419103232, 73786976294838206464, 147573952589676412928, 295147905179352825856, 590295810358705651712, 1180591620717411303424, 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# Aussie high-flyer comes good in UK

IAN DIERY, Wang's UK managing director and recently appointed vice-president for Western Europe, is a keen sportsman. He regularly plays wing forward in Richmond Rugby Club's veteran team, picking up the occasional black eye, and also plays a lot of golf and tennis.

The large framed picture of the America Cup-winning yacht Australia II prominently displayed on his office wall at Wang's headquarters in Hounslow leaves no doubt as to his nationality.

Diery arrived in the UK in 1978, having been a high-flyer in Australia. After studying civil engineering he joined a video-taping company, and by the age of 23 was running operations for the State of Victoria.

He started up his own company in the same line of business, and after selling out in 1978, travelled to Europe and the UK - "as every Australian does," he quips.

On arriving in the UK, he fixed up interviews with IBM, Xerox and Wang. Wang was the first to interview him and he took a job as salesman on the spot without waiting for the other interviews. He moved up rapidly to become managing director for Wang UK in 1981.

Diery says that he is hugely im-

pressed by the UK. "There is so much talent here, but it lacks direction. The UK has exported so many standards, such as language, banking techniques, law, governments. The real challenge now is for the UK to overlay technology on top of those carriers."

His new appointment will mean a few changes. "I will have less day-to-day involvement in the UK. The UK is the fastest-growing subsidiary, but that doesn't mean the methods used here will work on the continent - one has to be careful and not bulldoze UK methods."

by John Riley

Wang UK has been growing rapidly under Diery and the end of year figures in July showed a 47% increase on the previous year to £50.9 million. The secret of Wang's success is that its word processor products got the Wang name on people's desks.

"Wang separated the word processing and data processing sales efforts, and that tactic is paying off. We recently sold 120 VS systems to a customer who had previously bought just one Wang word processor," he told me.

It is because of the proven suc-

cess of that strategy that Diery is pulling out all the stops to get Wang's Professional Computer on desks where they can be integrated into networks.

Diery is not complacent about the shakeout convulsing the micro market but believes that Wang is "well-insulated."

He also thinks that "other companies have sold too many personal computers at a loss, allowed their inventories to build up, and haven't got their manufacturing costs down low enough. There are also a lot of single product companies which are vulnerable and can't get out of the way when IBM moves."

Diery's recipe for success is that companies need a systems approach. "Firms need their own manufacturing, their own R&D, their own marketing and support, and then they can set up worldwide."

"We are finding that the shakeout is helping us," said Diery. "Our personal computer dealer network is picking up and people are looking more closely at us all the time."

"We are encouraging the dealers into the areas that are not economical for us, particularly with selling standalone personal computers. We give leads to dealers in



DIERY... "There's so much talent in the UK but it lacks direction."

those areas."

Wang has no intentions of following IBM into the home computer market. "The very low end is like the calculator market," said Diery, "and Wang moved out of the calculator market years ago."

Looking to future developments, Diery says: "I believe that to do well in the DP world you have to break traditions." He is keeping Wang's own developments close to his chest, but is excited by the Professional Image Computer which was launched recently in the US, and believes there is a strong future in

voice messaging and integration.

"The huge power of the personal computer still needs a structured input and is getting harder for the non-DP person to use," he says. "The real breakthrough will be when we can put unstructured data in to all the machines we make."

Diery is placing great emphasis on software development. "We now have 35 to 40 software developers for the personal computer and are getting our act together. Software houses are now coming to us whereas previously we went to them," he adds.

Diery notes with satisfaction that the VS minicomputer has taken off - "we are getting more multiple orders now." He does not forget the role that the word processing side of the company has played in helping along them.

"Five years ago, word processors were the Cinderella of the industry," he says. "It is a difficult step for a word processing company to move into DP or a DP company to move into word processing, and we are proud of our achievement."

## PLATFORM

# Public has misfounded faith in ads

OVER many years we have become used to consumer product advertising. We expect to be harangued on the television, in the press, on the radio with requests to buy many different brands of washing powders, lagers, margarines, or the like.

Most advertising is for mature products in mature markets. The public really knows that the difference between particular brands of, for example, washing powder, is small. They all work acceptably well. The buyer knows how to use the product and approximately how much they cost.

The last two years have seen these same promotional techniques used for a newer - and rather less mature - product. It seems now that there are perhaps more advertisements for personal computers and software in the media and television, newspapers and the radio - than for washing powders and suchlike.

The campaigns have helped to create consumer demand. Sales of personal computers have rocketed - some estimates put growth in the last year at over 100%. Many small businesses, and many more not so small ones, have succumbed to the advertising.

The money has been paid over. The boxes have been delivered and unpacked. The shrinkwrapped packs opened and the diskettes loaded.

It's then that the buyer starts to think that perhaps the advertisement promised rather more than he actually has received. A few months later and many purchasers know what harm a limited system can really do to their business.

Personal computers - and particularly the software which makes

them work - are not yet mature products and the market quite definitely is not experienced in choosing what will best meet its requirements.

The differences between products are very great and yet these differences are in no way apparent in the advertisements. Buyers believe that one software package is very much like any other. They all work, of course!

It is also false to assume that any of the packages would meet buyers' particular purposes.

I believe that the buying public are regarding computer advertisements with the same faith in the product and the companies supplying them as they do for other consumer products. That faith is misfounded. The buyer then pays the price. That price can far outweigh the cost of the system. It can affect his business and his life's performance for years to come, sometimes in a quite disastrous manner.

The evidence that the promotion does work, and that the buyer is not quite as expert as we might believe, is all around us. Why else are some of the best selling financial accounting systems for personal computers condemned by so many knowledgeable people as being limited in functions? And so much so that even the smallest business gets frustrated with their lack of functionality after just a few months?

Why is it that buyers enter Hoekyns Business Centres and demand products by name when they are unaware even of the most general features of these products?

Until the PC industry has matured we will have to accept that differences between personal



## DOWNTIME

# Down the salt mines?

FROM time to time everyone suffers from "finger trouble" while out on the old computer frontier, but most of us manage to recover before someone else notices. A lot of us would be out of a job by now otherwise.

Not so lucky was one unfortunate computer operator at Soviet news agency Tass' headquarters. While pumping out the usual exciting news such as the cost to Moscow of cleaning the snow off its streets (45 million roubles a year for those of you who must know) this hapless operator put one of the wrong files down the

wire. And a number of bored people manning the printers at the other end of the line - in embassies and news offices - found themselves reading a rather detailed account of work on an optical memory system being developed for the US military.

But only for about 400 words' worth, for the mistake was noticed and the report cut off in full flood. Tass isn't saying a great deal about where the information came from or where it was really supposed to go but it isn't exactly the diplomatic coup of the year.

## It's a tough life being a hack

SOME Miss World hopefuls, including the winner, visited our Compo exhibition last week - but the star of the show was their hunky chaparrone (44, 40, 42), who was determined that none of us hacks were going to get near enough to his girls to ask them what they thought about cruise missiles and birth control.

He was reaching for the shoulder holster when a *Computer Weekly* hack dared to ask which countries the ladies were from. He mused in quickly shouting, "no interviews, no interviews!"

And after taking one picture a *Sun* photographer was told to "back off" (at least that's what it sounded like).

The contestants were just expected to stand there by a terminal looking pretty. I hope they enjoyed their visit to Compo.

## So much for romanticism

THERE was more than a touch of inverted snobbery at last week's Pergamon Infotech conference on the state of the art in information technology.

Many of the company presidents and managing directors invited to speak found themselves unable to resist the opportunity to plug their own companies, and the assembled delegates were treated to slides of garages and attics where successful systems houses began their days.

It practically descended to the "I remember when I was a lad and I founded a company in a shoe box" level.

But they were all outdoors by Ian McNaught-Davis, founder of Comshare and presenter of the BBC series *The Computer Programme* and *Making the Most of the Micro*. He was shamefaced to admit that the one thing that was at a



And it isn't saying anything at all about any new posting for its duty operator.

# ComputerWeekly

Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS

Thursday, November 24, 1983

## Stop nit-picking over IT money

IS the UK government interested in information technology or not?

This week the Department of Trade and Industry has stalled over a small £16,800 grant to fund a project designed to bring university software to market through services firms. The object is to tap the commercially vast amounts of software waiting in universities for suitable market outlets.

Academics do not have the time or expertise to package and sell software. The project, proposed to the DoTI by the National Computing Centre, would be an inexpensive way of putting services firms in touch with a ready source of products.

The scheme, which has been brewing since the start of the year, has already received tacit governmental approval. Alistair McDonald, head of DoTI's information technology division, said he was happy with the idea. But a decision for the go-ahead has again been postponed.

The university software scheme is not the only one awaiting approval.

There is still no decision on the future of the ExportIT programme. In its first year ExportIT gave UK companies export contracts representing business totalling £10 million. ExportIT was given £250,000 in governmental funding in 1981, and has managed on that since then. The director of the programme reckons with something less than £200,000 it could become self-financing in three years.

The future of ExportIT has been under review since December of last year. It was believed to be near the top of the in-tray after the June election. But the decision making process in the DoTI drags on.

There has been a certain amount of turmoil in the DoTI this year. After the June election Cecil Parkinson was brought in to replace Patrick Jenkin. The trade and industry departments were merged. Parkinson's tenure was brought to an abrupt end because of his social indiscretions, and Tebbit was brought in to take the reins.

That being said, the government continues to talk about the importance of high technology and services industries. Fine words, without the seed money which is needed, leave the government open to criticism of shortsightedness.

Other DoTI schemes to foster new technology are also understood to be marking time. It is not clear whether the problem is indecisiveness on the part of ministers, the general restraints of the government's monetary targets, or the dislike of any projects which might be termed interventionist. Whatever the cause, the effect is apparent. Innovative and inexpensive schemes are being stifled.

## DP leaves the closet

THE computer industry is developing a bent for the sensational story. In London last week, Earl Joseph, once chief engineer at Sperry Corp, spoke of brain cells being grafted on to microchips as the logical outcome of the impending marriage between biotechnology and computer technology.

On the West Coast of the US, the US State Department made Silicon Valley a "no-go" area for Soviet citizens and diplomats. And in Sweden, four crates believed to contain a DEC Vax minicomputer were stopped by customs officials who suspected shipment to the USSR.

The *Sunday Times* billed the crates as containing a complete missile guidance system, while a US customs officer, perhaps a bit closer to the mark, said the equipment could be used for just about anything.

Spies and bio-computers provide the kind of excitement which ensures that trade papers like *Computer Weekly* no longer have the computer industry all to themselves. National newspapers, television and radio are all devoting more and more attention to what was once a specialist field.

It is often easy to sneer at their "unsophisticated" coverage. That is a mistake. Sensational as our industry is becoming, it is finally coming out of its closet, and becoming accessible. That is a painful, but necessary part of growing up. It can also be fun.

## 1984 and all that...

THIS week's example of the strange things people say about computers was sent in by Patrick Bermingham of Dublin, who wins £5. Computers are here to stay. They have joined the radio, the car, and the television as a part of everyday life.

## LETTERS

# Cool reaction to a review

I HAVE read Arnold Arnold's "review" of my book, *Build Your Own Export System* (*Computer Weekly*, November 10) and would like to draw your readers' attention to the method which he attributes to me.

He describes it as follows: "If you believe that a cold day is likely to be followed by a warmer one (or vice versa) and that this increases the likelihood of rain by 60%, you then enter that fact on your informational matrix."

"If you think you know something else that creates a likelihood

of rain, you enter that figure as well.

"You then average the total and get 50%, which is the probability of precipitation for tomorrow." I should like to make it quite clear that at no point in the book do I suggest such a method of working. I would also like to make it clear that I cannot think of any situation in which such a method might reasonably be applied.

If, as he claims, the statistical analyses I provide are "all known to most secondary school students", then that is clearly a level

of education to which Arnold might usefully aspire.

Without dwelling on any other inaccuracies contained in the "review", I would simply point out that these errors could have been easily avoided by the conventional technique of reading the book prior to publishing a review thereof. This may seem like a hard way to earn a reviewer's fee but, honestly, such a method as described could not have been entertained by anyone who had managed to get beyond, say, page 22.

CHRIS NAYLOR  
c/o Sigma Technical Press.

## Too old to work at 35?

AS a systems graduate with data processing experience from 1965, I am puzzled by the report of Andrew Thomas (*Computer Weekly* Recruitment Supplement, November 10) and cannot reconcile the second and ultimate paragraphs, although a year's unemployment possibly confounds my perspicacity.

Could it be explained why with over 10% of the computer workforce on the dole, that there is a shortage of experienced staff? There is a hint to the answer in John Riley's report of the Cost Survey on poaching of staff. Over the last year I have applied for over 300 posts and gained 50 interviews, and my overall impression is that employers are only willing to recruit from existing installations, irrespective of any training needs.

Furthermore, there is an industry-wide discrimination against anyone over the age of 35 - presumably because we cannot cope with any problem not reducible to a dollar-sized card patterned with rectangular holes.

The industry should be reasonable enough to grasp that the shortage of experience between the ages of 25-35 cannot be alleviated without a time-machine. The position could be improved by considering the potential contributions of our sons of Babbage, and removing selection decisions from the pre-adolescents with more distasteful staffing ability.

Is it possible that the computer business is the tightest closed shop in the country, outside journalism and the law?

I would appreciate comment from other grounded veterans.

RALPH GEB  
Richmond  
Surrey.

## Baseband confusion

I AGREE with my old friend Martin Hewitt (*Letters*, *Computer Weekly*, November 10) that Fred Jennings' Jenseiteers are an excellent primer.

However, in Jennings' November 10 article, he is incorrect in asserting that baseband modems may not be used on British Telecom leased circuits. As an unwary user, who does not use baseband modems for remote data links in the immediate area, will spend much more than he needs to, this letter will try to put the record straight.

There is, we acknowledge, a lot of confusion in this area. Baseband modems, line drivers and limited distance modems are not synonymous.

Line drivers transmit original data to line, without using any modulation scheme. Therefore, it is incorrect to call them modems (modulator/demodulators), although they use baseband line circuits. They require DC line coupling and continuity and are, therefore, hazardous to use between remote sites between which potential differences (voltages) may exist.

The effective operating range of line drivers is inversely proportional to the transmitted data rate.

DAVID STREET  
Marketing manager  
Gandalf Digital Communications  
Warrington.

## Putting Erlangs to the test

THE article (*Computer Weekly*, November 3) by Donald Kennett quotes BT director John Alvey describing a new telephone exchange as "a 1000 Erlang (calls per hour) exchange".

I have frequently used the "Erlang test" as a test of competency in telecommunications, and it is said to see that John Alvey (of all people) is reported as failing it. I hope that it is in fact not him but your reporter who is not aware that an Erlang is a measure of traffic

rather than number of calls, and that the exchange in question should statistically be able to handle some 20,000 calls per hour.

The test is of course to introduce a measurement in Erlangs into a conversation, and then to see whether the other parties use it correctly - perhaps John Alvey was using it to test your reporter's knowledge!

Dr J. S. LITTLER  
School of Chemistry  
University of Bristol.

## The meaning of mips

YOU published a letter by Josephine Shaw (*Computer Weekly*, November 3) suggesting that the acronym mips meant million instructions per second. I have always heard this term used as machine instructions per second (except by IBM-ers), thus mips would be roughly of the same order as flops, floating operations per second, and a million mips would be one megamips.

Could you clarify exactly how the units mips and flops will be used in the future?

ROGER ANDREWS  
Northampton.

For many years mips meant machine instructions per second. Now that all mainframes and most minis can easily be described in terms of millions of machine instructions per second, general usage has decreed that mips (or mfp, as in a then mfp machine) represents that. The term megamips is rarely used. Megaflops (millions of floating point operations per second) is the preferred image. - E. Luv

## The Ideal system

I AM writing to correct a slight error in your piece "ADR woos users with ideal system" (*Computer Weekly*, November 10).

The article suggests that Ideal translates calls on VSAM files to Datacom/DB calls. We do indeed have a VSAM Transparency feature, but it works thus:

1. Using a utility, the data is defined to the Dataconversion.
2. Data in existing VSAM files is loaded into Datacom/DB databases(s).
3. Existing VSAM programs accessing that data are linked with the VSAM transparency feature.
4. For online CICS programs, a one-line modification is made to CICS.
5. Both batch and online programs continue to operate unchanged against Datacom/DB rather than VSAM.

Even existing programs will run faster, and use fewer CPU I/O resources using VSAM transparency against Datacom/DB than against native VSAM.

NICHOLAS POLLARD  
Managing director  
ADR  
Hitchin, Herts.

■ MORE LETTERS - PAGE 16

There's a new research unit available at Riccarton which comes with a few inclusive extras - scientific libraries, computers, laboratory equipment and, most importantly, the human resources of a technologically powerful university.

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Scottish Development Agency



It seems inevitable that only extremely small systems are capable of being made error-free. Nuclear power plants and "defence"



the high technology area. The government is fulfilling its stated desire to increase defence expenditure by 3% in real terms (*Guardian*, November 7) and is greatly increasing the number of nuclear weapon carriers (planes and missiles) and warheads in this country. Meanwhile we are being told to tighten our belts.

terparts. But that is not the point. What this book does is to provide an easy route (yes, even for those of us who "only" have secondary school mathematics) to implement simple but working expert systems on popular micros.

I am pleased to report, by the

**GRAHAM BEECH**  
**Sigma Technical Press**

two-thirds of the time of other languages. I would be interested to know how much longer it would take to debug.

If the move is to languages such as Trans-Basic then the hopes of the Alvey Committee that the UK will lead the world in software engineering by the mid-

steering committee and a number of the specialist sub-committees of the users group, Ada Language UK, and as the leading member of the Augusta consortium has taken part in a government-funded Ada methodology study.

We take pride in our claim to be Britain's premier Ada systems supplier.

**ANDREW MACKE**

terparts. But that is not the point. What this book does is to provide an easy route (yes, even for those of us who "only" have secondary school mathematics) to implement simple but working expert systems on popular micros.

I am pleased to report, by the way, that the book has been adopted as a recommended text by Kingston Polytechnic.

**GRAHAM BRECH**  
**Sigma Technical Press**

eyes. It is about time they opened them, since the benefits are plenty – a reduction in the number of terminals needed to access different systems and the ability to communicate more easily with users in other organisations. The truth is perhaps that users and suppliers are both to blame for the slow acceptance of computers.



And who is to blame if the user does not know the answer to that question?

*\*User Perspectives on Information Technology*  
 E3, National Economic Development Office  
 Millbank Tower, Millbank, London SW1P  
 4QX. Tel: 01-211 4717.

# Vol 3

# air

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# EUROPE

systems and enable them to take advantage of new developments, says the report. UK firms must

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## NEWS ANALYSIS

The budget for Europe's response to the Japanese fifth generation has already been pruned, and the whole future of the programme is on the agenda for the political leaders' meeting in Athens next month . . . John Riley reports

# Esprit hangs in balance at EEC summit

THE European summit in Athens in December will determine the future of Europe's five-year IT research programme, Esprit.

Even though £60 million has been lopped off its original budget of £900 million, and the programme is now snarled up in wider political manoeuvring, officials are confident it will get the green light.

Esprit, the European Strategic Programme for R&D in Information Technology, is the European Community's response to the Japanese fifth generation challenge announced late in 1981. It was masterminded by Viscount Bédarride Davignon, the European Commissioner for Industry, who believes the European IT industry must pool its R&D resources to survive the threat from Japan and the US.

By European Community standards, the Esprit proposals have worked their way quickly through the European institutions. European politicians and bureaucrats as well as national governments, are all agreed on the importance of the programme and the £14 million one-year pilot programme, which got underway this summer, was proposed, agreed and implemented within a year.

In contrast the Informatics Programme took four years to get through.

But the main £840 million Esprit programme, proposed this summer and expected to proceed as smoothly as the pilot scheme, hit problems late last month. Although the technical and administrative details are virtually decided, the proposed five-year programme has become tangled up in the European budgetary crisis, and the final decision about its future will be made at the summit in Athens next month.

The European Community is funded from two sources: national governments, and from the VAT tax levied throughout Europe. It gets 1% of the VAT, but total VAT returns are declining and Community running costs are rising.

So the Community needs more cash. The UK government is against an increase in its contribution — and looks like sticking to that position.

That means the European Community will have to shave its current programmes. One solution is to reduce the Common Agricultural Programme, but the French will not buy that, and Esprit has now become a pawn in the wider bargaining game.

Just three weeks ago European ministers slashed £60 million off Esprit's proposed £900 million budget, and the UK refused to commit any cash at all to the programme until the wider budget had been sorted out.

The UK government's contribution to Esprit should be £100 million over the five years. Of the £840 million, European industry will put up half.

Germany also refused to commit cash, but that was over certain administrative details which are expected by European officials to be cleared up soon. The other eight Community countries are now

committed fully to Esprit.

The whole question will be thrashed out at the Athens summit, and well-placed officials in Brussels believe Esprit will go through after a bitter debate.

Those officials comment that the Commission can just about cope with the reduced funding for the programme, and that there has been no change to the aims or content of the programme. The timetable also remains unchanged.

Davignon, the driving force behind Esprit in the Commission, has stated that if it is necessary for the European Commission to arbitrate on projects at the end of the year as a result of the overall Community budget, Esprit will be the top priority. "Only a major catastrophe will stop the programme now," confirmed one official.

The Commission believes it will be a catastrophe for Europe if Esprit is held up. The urgency stems from Europe's increasingly negative balance of trade in information technology products.

"In 1975, the European IT trade balance was \$1.7 billion in credit," says Jean-Marie Cadiou, director of the Commission's IT Task Force. "It is now in deficit by \$5 billion and that will increase to a deficit of \$9.7 billion by 1985."

Cadiou pinpoints the reasons for this growing IT trade deficit as resulting from "Europe's fragmented market, national champions leading each country's IT activities, migration of centres of innovation, shortage of skilled manpower and technology lags."

It was against that gloomy backdrop that Davignon got the main European IT companies together to sit round a table to draw up a programme for Europe's long-term R&D strategy. Those companies included ICL, GEC, Plessey, Siemens, Nixdorf, AEG, Thomson-CSF, CII-Alcatel and Olivetti.

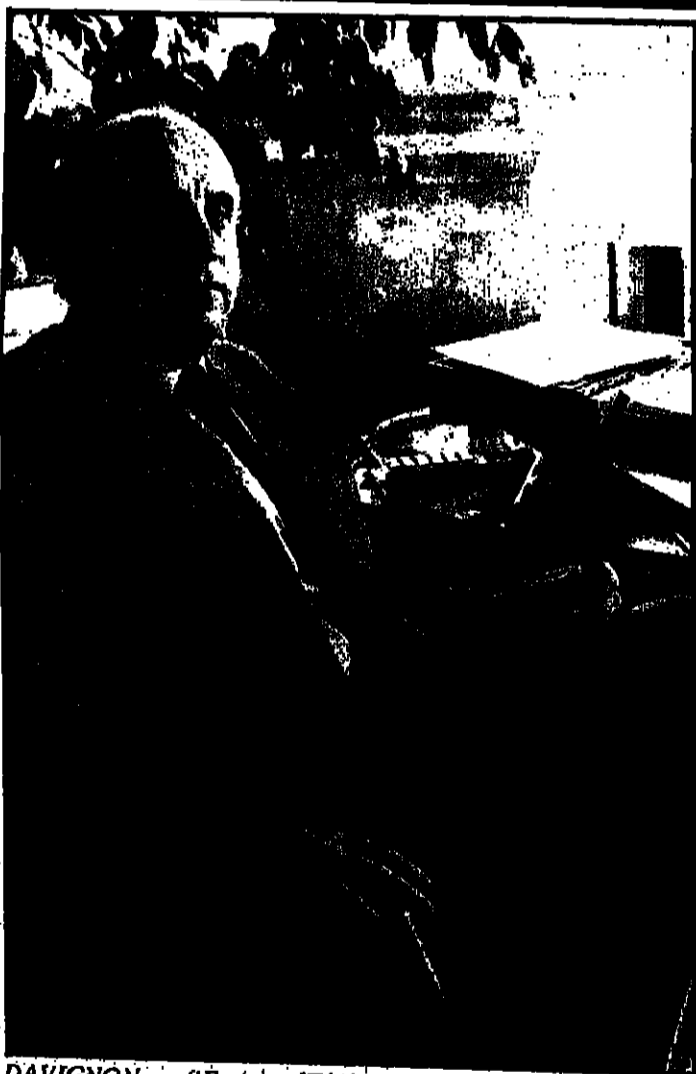
"The Esprit programme does not come from bureaucrats in Brussels," explained Cadiou. "It is a grassroots programme that comes from the best people in Europe, including small companies, laboratories and universities."

The resulting programme is structured around five interrelated themes. Three of these address the key technologies which are at the core of any information technology application, and two are the key IT applications of the 1990s.

These are:

- Advanced microelectronics technology which provides the physical structures for any information system. Work will embrace design, manufacture and testing of VLSI devices in silicon and other materials. One aim is to break the

Just three weeks ago European ministers slashed £60 million off Esprit's proposed £900 million budget, and the UK refused to commit any cash at all to the programme until the wider budget had been sorted out. The UK government's contribution to Esprit should be £100 over the five years. Of the £840 million, European industry will put up half



DAVIGNON . . . "European IT industry must pool its R&D resources."

one micron barrier for components in integrated circuits.

- Software technology, which controls the behaviour of any IT system. Aims are to establish standardised software interfaces, to produce an automated software environment, and to bring about change so that instead of software being labour-intensive as at present, it becomes capital intensive.
- Advanced information processing, which is to work out how to bring together hardware and software to make the quantum leap from today's data processing to the

next generation of knowledge processing, and expert systems. So instead of the program being the solution, it will in future help choose the solution. Systems will perceive information through a wide range of sensors, relate it to knowledge already stored, then create new knowledge using rules and inference.

- Office automation is a key area of the 1990s, and research will be directed towards developing multimedia interfaces for all office communication needs, and develop electronic filing systems for un-

structured information (text, voice, graphics, images, etc.)

■ Computer integrated manufacturing, to integrate control systems on to chips and study subjects such as real time sensor-based imaging and advanced components to establish a supersystem such as an electronic factory.

The 36 collaborative one-year projects in the pilot Esprit programme, announced in August, are all based on those five themes. UK participants are involved in 21 of the 36 projects, with Plessey and GEC respectively taking part in seven and five projects.

Other British companies in the pilot phase include SDL, Scicon, British Leyland Systems and British Aerospace Dynamics, as well as ICL, Marconi, Logica, STC and STL.

Universities taking part include Southampton, Newcastle, Sussex and Strathclyde and Queen Mary College London. The Polytechnic of the South Bank is also involved.

Each project funded by the main Esprit programme will focus on one of the five categories.

There are two classes of projects:

Type A are mainstream projects and will take up 75% of the Esprit cash, and will be 50% funded by the companies that take part in them.

Type B projects are high risk speculative projects in promising areas they may get more than 50% support from the Community.

For the Type A projects, at least two companies from two different European countries must take part; and while that is not mandatory for the Type B projects, international projects are more likely to get preference.

The total value of the programme will be about £840 million over the five years, of which £420 million is to be put up by industry. It compares well with the UK Alvey programme's total of £350 million and the Japanese fifth generation programme's total of £600 million over ten years, but pales somewhat when compared with IBM's annual R&D budget which is now over £1,000 million.

The Esprit programme has its critics, especially the smaller companies, which are not happy with the 50% they have to put up. Last June, the Association of the European Informatics Industry hit out at the programme for not providing enough support to small companies.

The main objections are that the programme is inadequately funded, that it benefits only large companies, that it makes no provision for competitive research, that results will not be freely available and that selection of projects will be politically motivated.

Mike Smith, chairman of software house CAP, which was involved in a pre-pilot phase of the Esprit programme, thinks funding should be 100%. "With 50% funding small companies will only participate to do things they would do anyway."

Smaller companies also regard the Esprit programme as a gravy train for the large companies, and

as a backhanded way for national governments to prop them up.

The Commission vigorously counters such suggestions. "It only emphasises and re-emphasises that selection has nothing to do with the size of the company but on the nature of their proposals," says Horst Hönke, who is manager of the Esprit programme, and responsible for selecting the participants in the programme.

The UK Alvey Programme is in close contact with the Esprit programme.

Brian Oakley, the Alvey Programme director, explains: "We are determined to integrate the two programmes as far as possible. For example, standards work is important for the Alvey programme, but is far more powerful if conducted through Esprit."

From his vantage point Oakley sees one important benefit of the Esprit programme as long-term international co-operation. "I sent the best laid plans in Europe are foiled by the personal relationships of those in the



HUNKE . . . "Selection has nothing to do with size of companies."

tions who have been brought up not to co-operate.

"Even if Esprit doesn't immediately solve the fifth generation problems, it will help to bring about convergence in Europe. The vital thing is that the younger researchers work together and learn that their foreign counterparts are reasonable, so that when they eventually get into powerful positions they will find it second nature to co-operate."

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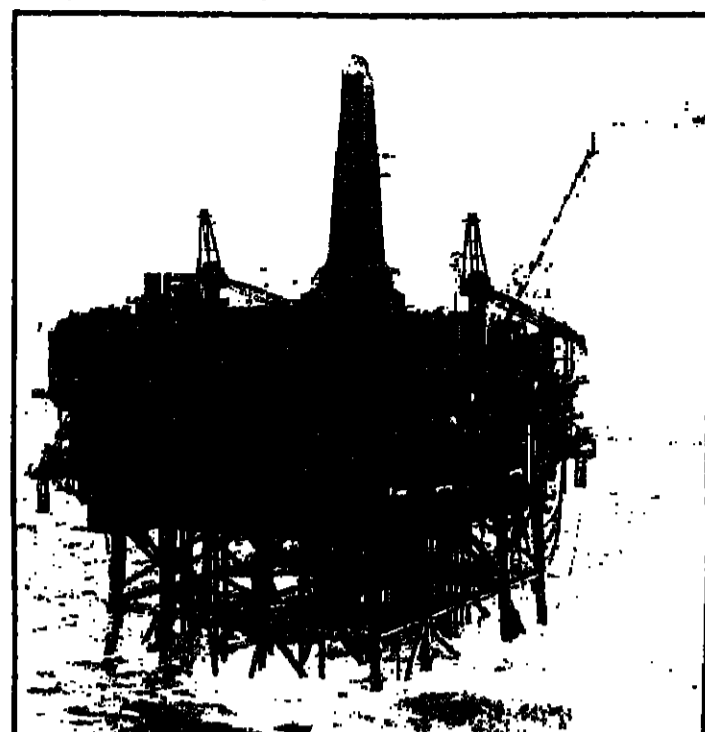
Good as most floppy disks are, they can never be as good as the new TDK range. TDK floppy disks benefit from more than thirty years of experience manufacturing magnetic recording tapes.

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Conoco's Murchison platform: a replica of its control panel plus a computer make up the simulator.

## Conoco donates oil well simulator

CONOCO - the oil multinational which frequently annoys its competitors by starting petrol price wars - has donated a £1 million offshore production simulator to Aberdeen's Robert Gordon Institute of Technology (RGIT) to teach students how to control oil production on a live well.

The simulator consists of a computer and a reproduction of the control panels on Conoco's Murchison platform, housed in a purpose-built cabin. Conoco has been using it since 1980 to train staff and simulate the effect of possible changes to its Murchison Field, such as sinking a new well or increasing the rate of production.

The simulator paid for itself while it was being built, according

to a Conoco spokesman. Experience gained while developing the simulator led to improvements in operating the real platform, reducing the chance of the rig being put out of action.

One of the most important aspects of the simulator is that it can imitate up to 250 potential malfunctions of the drilling platform, ranging from valve failure to a full blowout caused by a natural gas explosion.

"It can expose the operator to situations it might take him years to come across in the field," says the spokesman.

A simulated oil platform must duplicate the control room equipment exactly and respond to the operator's actions in real time if it

is to successfully replace training on the job. Conoco's simulator, finished in 1980, is the first to do this, according to the company.

Recently, Conoco has been using the simulator less, using it mainly for refresher courses and testing new operating procedures.

The oil company still has the option of using the simulator 10 weeks a year.

The equipment, built by Redifusion Systems, will be used to demonstrate control of offshore oil wells to diploma, degree and post-graduate students at RGIT's engineering schools.

"No other university or institution has such a piece of equipment," says RGIT principal Peter Clarke.

## Satellite reveals stars' secrets

CELESTIAL objects big and small have been discovered by the infrared astronomical satellite (IRAS), which since last February has been sending data down to the Rutherford Laboratory on the Berkshire Downs.

Among the 200,000 astronomical bodies detected by the orbiting telescope are several thousand new discoveries including whole galaxies of stars, stars in embryo, dying stars, and comets.

One of the most exciting discoveries was made in the vicinity of Vega, one of our neighbouring stars, which appears to be surrounded by a huge cloud of dust and rock. This material is probably left over from the star's formation, and could well, astronomers tell us, be condensing into a solar system of planets like our own.

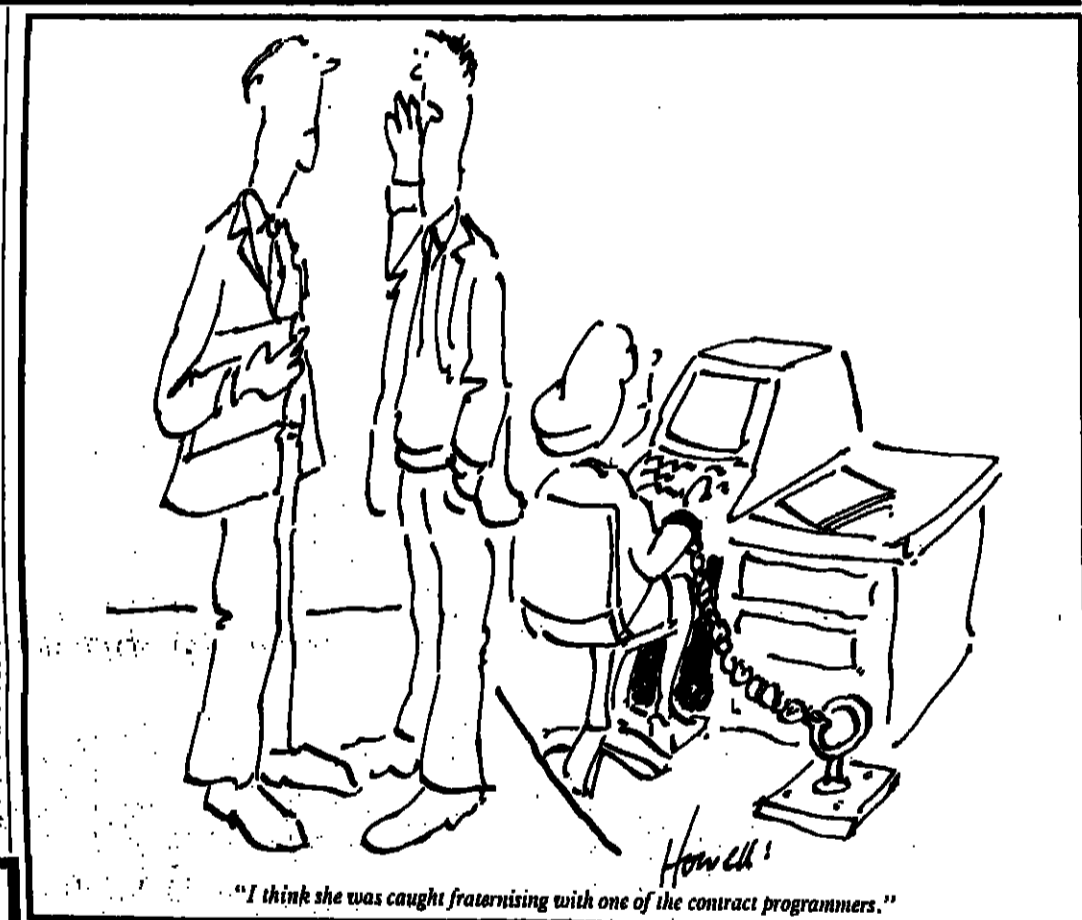
IRAS is a joint project between the UK, US and Holland, to build a complete map of the sky using the infrared wavelengths invisible

to the eye and conventional telescopes.

Every 12 hours the satellite passes overhead the Rutherford laboratory and unloads its data of recent observations as radio waves. These are converted to microwave signals passed along cables to DEC PDP-11 minicomputers for preliminary analysis.

An ICL 2900 is then brought in to help identify the astronomical bodies so that the satellite can perform a more thorough check on its next orbit, which overlaps with the previous one. Final analysis is done at Rutherford and elsewhere.

The analysis team must be pleased at the extraordinary range of objects found. One of the latest discoveries is a tiny asteroid, just a mile across, which moves round the sun in an orbit which intersects the earth's orbit. Small it may be by celestial standards, but should it one day crash in the Atlantic, not an impossible event, we would all be swimming or steamed by the heat produced.



## Database that spins a yarn

INCREASING use is being made of computer graphics in the textile industry, to help designers and buyers pick the patterns and colours they want for a fabric.

The Scottish College of Textiles (SCT) at Glasgow is developing a computer graphics system that could replace the woven sample from which buyers of thread make their final choice. The idea is that the pattern, as simulated on the screen from a database of yarn colours and thread patterns, can be built up on the screen by specifying yarn colours and patterns, and then adding threads together in a simulation of weaving cloth from individual coloured yarns on the loom.

The British Technology Group (BTG) is providing £21,000 over the next two years for the project, and investment is also coming from the Yorkshire-based Millwrights' Group, which produces cloth for suitcases.

The BTG will take the marketing rights for the software written by SCT.

Scot does not think its system will eliminate completely the need to weave fabric samples, but will enable designers to sort through a list of prospective designs which can easily be adjusted on the screen.

## Vertical lights do the trick

THE science of ergonomics seems to be catching on at last. Increasingly it can be seen in practice in offices, as organisations realise that spending money on making working conditions better for their staff is cheaper than not spending it.

The big insurance group Hambro Life for example, has reported a 15% increase in the productivity of its data preparation staff following installation of vertical lights on pedestals. At the same time, the operators are finding working life a little lighter.

The theory is that the light is directed at the ceiling, which is painted white and reflects the light evenly back down.

The new upright lamps were tried out on each of five data preparation departments before being installed permanently. "They all went mad when it was their turn to return to the old lighting," says supervisor Brian Baker.

The lamps each use 200 watts, and Baker says they are no more expensive to run than the old strip lighting. Before installing the lights, Hambro tried putting blinds over windows to reduce glare from the VDUs. All this did was to cut out the natural light. But the vertical lighting seems to have done the trick, with operators

now reporting fewer headaches.

Meanwhile, several US companies are reversing the tide in openplan offices by putting their programmers back in private rooms. As with Hambro, productivity improvements have been reported, but without conclusive evidence. Also like Hambro, most of the programmers prefer their new conditions.

Ergonomics, like conservation, has not yet proved as popular in the UK as elsewhere. But, as Hambro has found, it need not cost much to ease the lot of a VDU operator.

Workplace is compiled by Philip Hunter



## Barry chips in on Radio 4

BARRY Norman, BBC film buff, will present a three-month radio series on computers starting January 14, 1984. "It will cover everything from the latest bit of electronic chippiness to the social importance of the government mainframe," says the programme's producer Trevor Taylor.

The programme will go out at 5pm on Saturday afternoon on Radio 4 and be repeated on VHF at 11pm on Tuesday. Taylor has added an unusual feature - its repeat will be five minutes longer than the original show to include hot computer news.

The first repeat, on Tuesday January 17, will include details of the Which Computer Show, to be held in Birmingham that week. The programmes will discuss software to illustrate the topics being discussed.

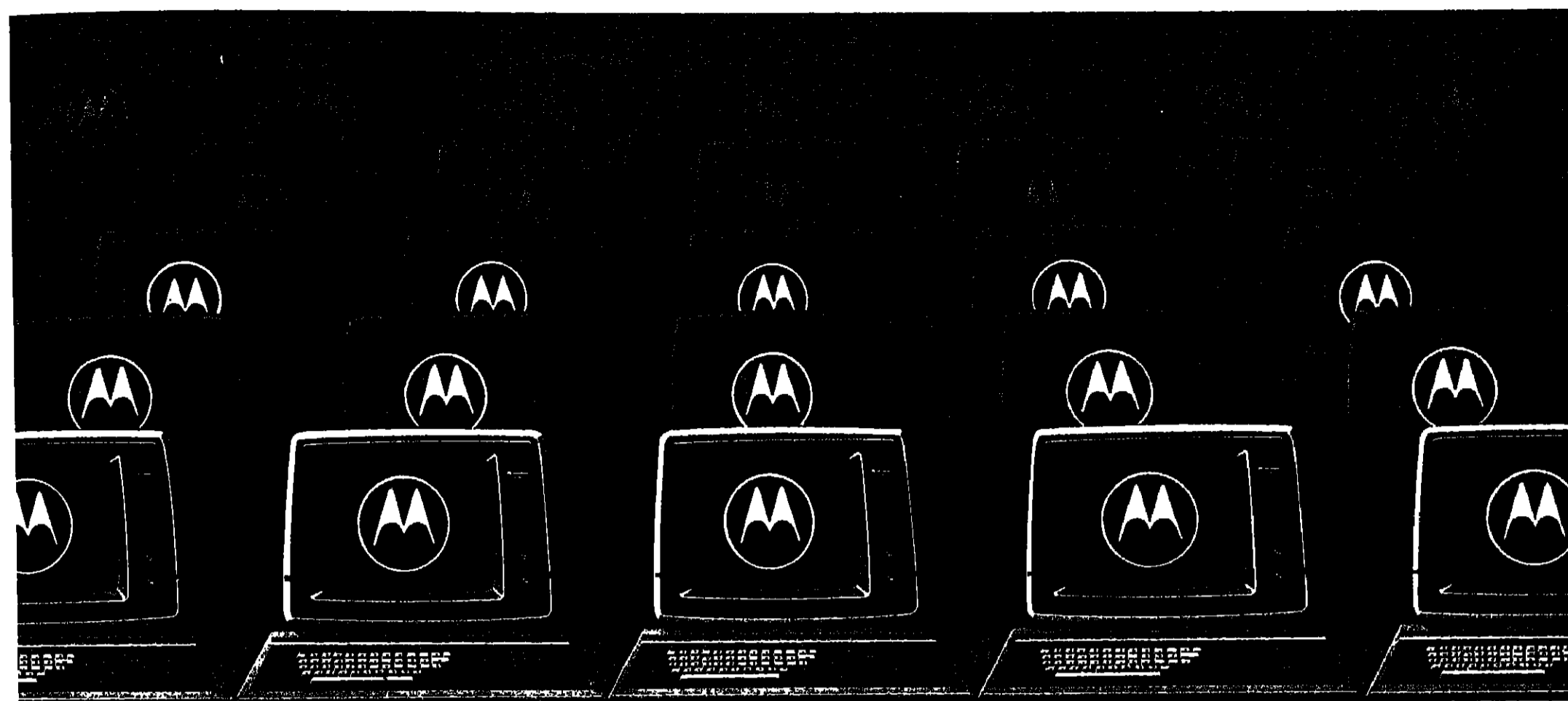
When talking about large corporate databases for example, listeners will be given a simple database so that they can play around with the concepts at home.

The software will be sent as an audio signal which can be recorded on a cassette linked to a radio, and then loaded into a computer. Taylor says the BBC has demonstrated this on the Tomorrow's World TV show. The software will also be available on Ceefax.

Taylor says that if the programme is successful, future shows might introduce listeners to the excitement of interactive computing, with their micros linked by telephone line to a BBC computer in the studio.

The programme will be called the Chip Show, and the software delivery service will be called the Chip Shop's Take Away Service. It seems as if the BBC is grossly overworking the chip pun, but presumably it feels the lay listener has not yet been much exposed to such geriatric rhetoric.

And what, I asked Taylor, does Barry Norman know about computers? Not a lot, is the essence of the reply. But with Taylor expounding more than one million listeners, an intelligent layman was perhaps to be preferred to a less articulate expert.



## Motorola creates a new kind of office automation company

Motorola recently created the Motorola Information Systems Group by combining the skills of several companies. Among them were Four Phase Systems and Codex.

The result is a company that brings you complete systems capabilities; a single source for both processing and networking elements in the office environment.

This integration of computing and data communications capabilities provides many advantages.

Obviously, there is the convenience and efficiency of dealing with one vendor for all systems requirements.

But even more important is the opportunity to "custom-tailor" your systems to your specific needs, because of the very broad range of processing and communications products we have available. (Many of these have been productively at work in customer installations in Europe and around the world for years).

In addition, there is the flexibility of our networking capability which allows data from divergent types and makes of

computers to be transported on one network.

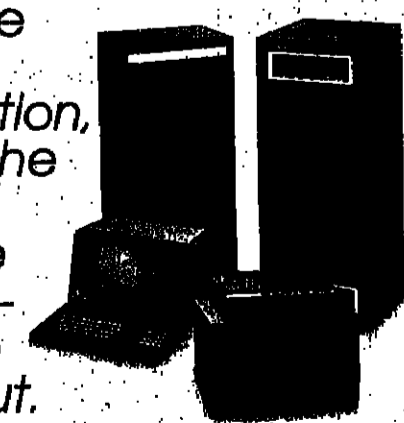
Motorola Information Systems Group represents a unique combination of skills, technologies and options for solving problems, now and tomorrow. Motorola, a world leader in electronics, provides support in terms of its size, global scope and financial resources.

And Motorola is no stranger to the worlds of information processing and data communications. The Motorola MC68000 microprocessor is the brain of some of the world's most widely respected microcomputers.

We also share a philosophy based on quality products that meet customer needs and exceed customer expectations.

We hope to prove that to you, soon.

For more information, call us, write us or visit the Motorola Information Systems displays at the upcoming office automation exhibitions. We have a lot to talk about.



**MOTOROLA** Information Systems Group

# What the user needs to know about modems

Seventh in the Jensheets series by Fred Jennings of Data Logic deals with modem standards

A MODEM (modulator-demodulator) is an item of equipment which converts serial digital signals into analogue signals and vice versa. Standards organisations use the general abbreviations of DCE (data circuit-terminating equipment) to describe a modem and DTE (data terminal equipment) to describe a terminal, computer, or any device connected to a modem. Therefore a modem has two recognisable interfaces:

(a) A DCE to leased line (or PSTN) 24 wire analogue interface.

(b) A DCE to DTE multi-wire digital interface.

Standards organisations refer to each wire in the multi-wire digital interface as an interchange circuit. In the case of the EIA RS-232-C interface (discussed later), the DTE-DCE interchange circuits appear on a 25-way 'D' type connector on the back of the modem. Interchange circuits are used for a mixture of data, control and timing purposes.

The characteristics of EIA RS-232-C interchange circuits are:

(a) For serial data signals, a nominal minus six volts equals a logical one and a nominal plus six volts equals a logical nought.

(b) For control signals, a nominal minus six volts equals an OFF condition and a nominal plus six volts equals an ON condition.

The CCITT (Consultative Committee for International Telegraph and Telephone) in Geneva is a part of the ITU (International Telecommunications Union). The CCITT V-Series recommendations cover data transmission over the telephone network. They include specifications for modems, interfaces, test equipment and line quality.

The CCITT X-Series recommendations apply to data transmission over public packet switched networks such as PSS.

The following is a list of CCITT V recommendations which apply to interfaces and voice-band modems:

V10: Electrical characteristics for unbalanced double-current interchange circuits for general use with integrated circuit equipment in the field of data communications.

V11: Electrical characteristics for balanced double-current interchange circuits for general use with integrated circuit equipment in the field of data communications.

V15: Use of acoustic coupling for data transmission.

V21: 200 bps (300 bps) modem standardised for use on the general switched telephone network.

V22: 1200 bps full duplex modem standardised for use on the general switched telephone network.

V23: 600/1200 bps modem standardised for use on the general switched telephone network.

V24: List of definitions for interchange circuits between data terminal equipment and data circuit-terminating equipment.

V25: Automatic calling and/or

answering equipment on the general switched telephone network including disabling of echo suppressors on manually established calls.

V26: 2400 bps modem standardised for use on 4-wire leased telephone type circuits.

V26 bis: 2400/1200 bps modem standardised for use in the general switched telephone network.

V27: 4800 bps modem with manual equaliser standardised for use on leased telephone type circuits.

V28: Electrical characteristics for unbalanced double-current interchange circuits.

V29: 9600 bps modem standardised for use on leased telephone circuits.

V35: Data transmission at 48,000 bps using 60-108 KHz group band circuits (wide band).

V36: Modems for synchronous data transmission using 60-108KHz group band circuits.

V52: Characteristics of distortion and error-rate measuring apparatus for data transmission.

V54: Loop test devices for modems.

This recommendation defines four loop tests for DTA and DCE as follows:

Loop 1 is used as a basic test on the operation of a DTE. Signals sent by the DTE are returned directly to the same DTE for checking.

Loop 2 is a loop placed on the DTE side of the distant DCE. It is formed by applying pre-determined conditions to the interchange circuits at logic voltage levels within the DCE.

Loop 3 is a loop placed across the transmit and receive paths on the analogue line side of the Local DCE.

Loop 4 applies only to 4-wire lines and is formed by looping the transmit and receive paths at the distant end through a suitable attenuator.

The following is a list of CCITT X recommendations which apply to public data networks:

X1: International user classes of service in public data networks.

X2: International user facilities in public data networks.

X4: General structure of signals of International Alphabet No 5 code for data transmission over public data networks.

X20: Interface between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) for start-stop transmission services on public data networks.

X20 bis: V21-compatible interface between data terminal equipment (DTE) and data-terminating equipment (DCE) for start-stop transmission services on public data networks.

X21: General purpose interface between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) for synchronous operation on public data networks.

X21 bis: Use on public data networks of data terminal equipment (DTE) which are designed for interfacing to synchronous Series V Recommendations modems.

X24: List of definitions for interchange circuits between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) on public data networks.

X25: Interface between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) on public data networks.

25-pin 'D' Connector Pin No	CCITT Circuit Ref	RS-232-C Circuit Ref	Description of Interchange Circuit	Direction DTE-DCE
1	103	AA	Protective Ground	
2	104	BA	Transmitted Data (TD)	→
3	105	CA	Received Data (RD)	←
4	106	CB	Request to Send (RTS)	→
5	107	CC	Ready to Receive (clear to send) (CTS)	←
6	108	CC	Data Set Ready (DSR)	→
7	109	CF	Signal Ground or Common Return	
8	110	CF	Received Line Signal Detector (RLSD)	←
9	111	CF	Positive Test Voltage (American)	→
10	112	CF	Negative Test Voltage (Modems)	←
11	126	SC	Select Transmit Frequency	→
12	127	SC	Secondary (backward) Channel RLSD	←
13	128	SC	Secondary (backward) Channel CTS	→
14	129	SC	Secondary (backward) Channel TD	→
15	130	SC	Secondary (backward) Channel RD	←
16	131	SC	Secondary (backward) Channel DSR	→
17	132	SC	Secondary (backward) Channel CTS	→
18	133	SC	Secondary (backward) Channel TD	→
19	134	SC	Secondary (backward) Channel RD	←
20	135	SC	Secondary (backward) Channel DSR	→
21	136	SC	Secondary (backward) Channel CTS	→
22	137	SC	Secondary (backward) Channel TD	→
23	138	SC	Secondary (backward) Channel RD	←
24	139	SC	Secondary (backward) Channel DSR	→
25	140	SC	Secondary (backward) Channel CTS	→

## PUZZLER

An Army convoy two miles long is travelling at a constant speed. A tank is at the front of the convoy and a jeep is at the rear. The jeep drives to the front of the convoy and back to the rear. How far does the jeep travel?

He takes six minutes (at a constant speed) to do the there-and-back trip along the side of the convoy before proceeding on his journey. How far is the jeep's constant speed?

Ignore the momentary pause as the jeep turns round at the front of the convoy. The jeep's speed is the same as the convoy's speed.

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## DATA ADMINISTRATION

Last week in the first article of this series, we described what data administration is and proposed a role for the data administrator.

In essence, data administration is concerned with the well-being of the organisation's data resource, just as personnel administration is concerned with the organisation's personnel resource.

Similarly, in the same way that most personnel administration is not done by the personnel department, so most data administration is not done by the data administrator either.

The principal role of the data administrator therefore is to advise management on all data related matters and problems. Problems of data often cross organisational boundaries and their solutions consist of technical and organisational aspects.

Because so many other departments may be involved, often at a senior level, it is not practical to give the data administrator enough authority to resolve problems directly. Instead he must be given access to authority - permission to seek out problems, propose a solution and then get together the people with authority to agree on action.

This second article discusses various aspects of setting up the data administration function.

Richard Heagerty and Terry Smith describe setting up the data administration function

THE nature of data administration is problem-oriented. It is clear, therefore, that it must be set up to handle a number of tasks, each of which must achieve proven benefits, and meet a specific problem.

Companies differ in the data administration tasks they carry out. Some begin major data analysis and system redesign using the data dictionary as an important aid. Others decide to use the data dictionary and documentation as a strong central control mechanism.

Others again embark on major data reconciliation exercises to ensure data compatibility between systems, functions or countries. Some companies carry out only very minor reconciliation or documentation tasks.

First list the likely tasks and evaluate their technical and organisational aspects. Next calculate what it is going to take to resolve those problems, the financial and non-financial cost. Then estimate what management commitment is

required, and what management commitment can realistically be obtained. Finally, make the selection.

We need to distinguish between perceived problems and underlying non-perceived problems. Perceived problems are problems as they appear to the managers, not necessarily as seen by the data administrator

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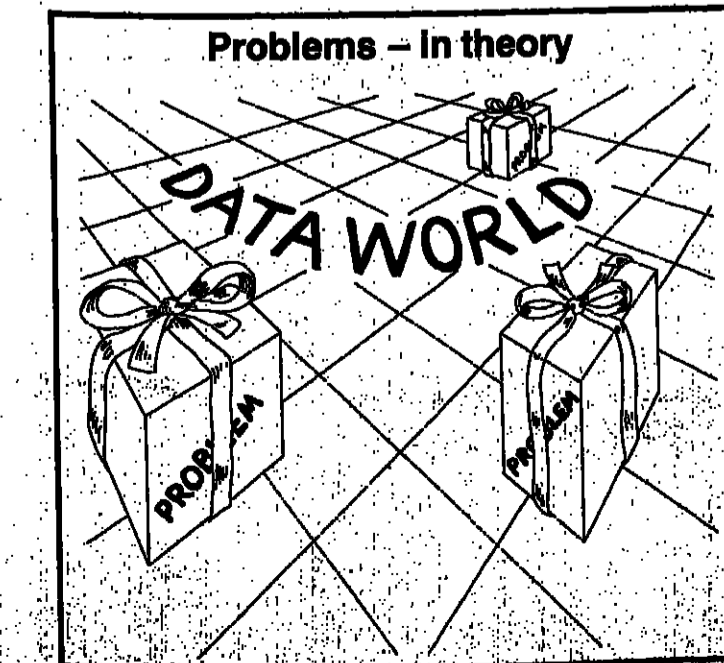
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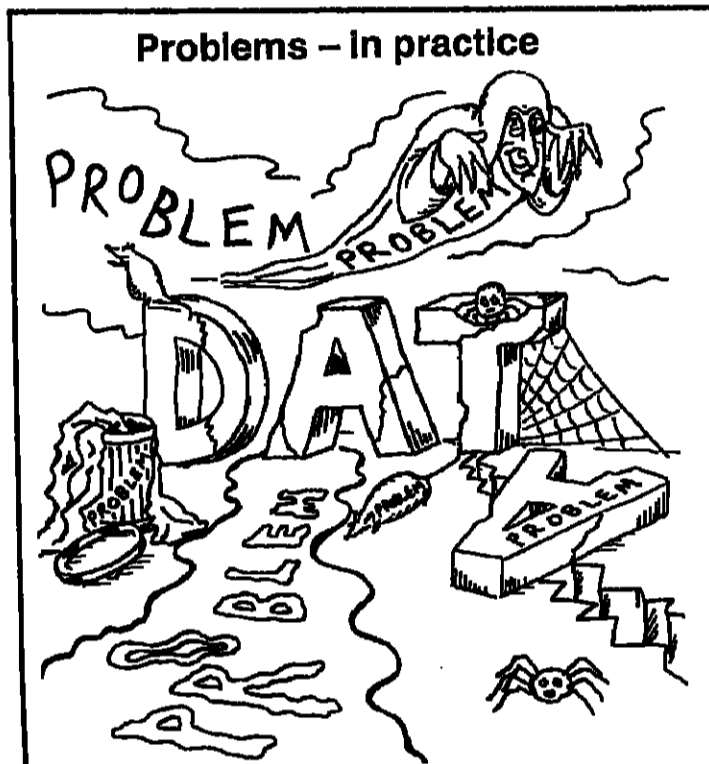
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Next, and possibly even harder, is to calculate what are the organisational aspects of the problem, and of solving it. What parts of the company are involved and in what ways? What managers would be involved, with what responsibilities and reporting structures? What person or people would be needed to make decisions? What are the personalities and views of all these people?

To calculate the effects of making changes in data, it may be necessary to carry out detailed discussions at working level with various relatively junior people, for instance, to see the effects of the seriousness of the consequences of decisions which will probably be required from a number of senior managers also.

The need for discussions at the various levels must be taken into account when choosing the tasks. Having identified these, problems



and having assessed the technical and organisational aspects of the problems, it is necessary to calculate what it will cost to solve them - what money, resources and time will each task require?

But that is only one aspect of the cost. It is also necessary to know the cost in terms of change in the way people do things, in terms of the controversy, in terms of having to get people to come together and agree conflicting requirements - it is necessary to calculate the organisational cost.

Many DP projects in the past have deliberately side-stepped or ignored organisational costs, e.g. by letting each function have its own product code or customer code. It is here that a data administration project may differ from most others - at least in emphasis. By its very nature a data administration project must face the organisational costs head-on.

Even in these days there are still some companies with money. Many of these would be quite happy to spend the time, money and resources to reconcile data discrepancies such as product or customer code. However, for many of them the cost in terms of the disruption and political embarrassment that would be required is unacceptable. One can spend money, but one cannot rock the boat. This leads on to the next consideration - management commitment.

Another cliché (like the one about data being a resource) is that data administration must have "management commitment". If it is to succeed, this is true just as the data equals resource statement is true. What does it really mean? It means the support of individual managers, individual people who are senior to or the peers of the data administrator. It means their support not just for the money, but for the disruption and controversy.

We know of an organisation where senior management caused system development to be halted while data administration set up an

environment of strong centralised control of that systems development.

This paid off handsomely for them and the same degree of control may be needed in other companies, too. Without that same commitment they would not achieve that control and if they tried, they would fail.

Clearly, you must go and try for management support. If you never ask you never get. But you will only ever get so much. They will not give more until you have proved value within a given time.

Having considered the above factors, preferably writing the analysis down, you must now choose the first task. It is necessary to weigh the seriousness of the problems, the likely benefit of the possible tasks, the feasibility and probability of success.

It is also important to consider time - how long until value is proven. It is conceivable that some companies would be prepared to wait five years before, say, the data dictionary is proven to be useful.

However, most managements would not, and in any case you should choose some other task which provides benefits much sooner. Then you can gain increased management commitment and go on to other tasks which build up the data administration function.

The final factor to consider is the long term opportunities opened for data administration by the task. Thus, if the company's problems require a data dictionary or the use of data analysis, a pilot project in one of these is a strong contender. For it would pave the way for many possible future tasks which would partly depend on them.

New week, in the final article, we will consider the subsequent stages of development of data administration, the people who should staff the function and its place in the company organisation.

Richard Heagerty and Terry Smith are consultants in CACI's business information department.

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## PEOPLE



Robert Holder (above) has been appointed managing director, United Kingdom, by AT&T International, the overseas marketing unit of AT&T. He has had a 12-year career with AT&T, most recently with AT&T Information Systems, which markets equipment and services to business customers in the US. He will live in London.

The Council of The Royal Society of Arts announces the award of the Society's biennial medal for 1983 to David Maroni, who, as director of external relations for British Olivetti, "has played a large part in advancing the high design standards of the Olivetti organisation in Britain." Maroni was for three years chairman of the board of governors of the Central School of Art and Design, and is currently chairman of the trustees of the Photographers' Gallery.

Digital Microsystems, originator of the HiNet local area network, has named Alfred (Fred) B. Pursell as director of international sales. He will be based at Digital Microsystems' Oakland, California headquarters. He was previously with Osborne Computer Corporation where he was responsible for launching the company's international sales programme and setting up a distribution network.

A salesman with almost 20 years' experience of office automation and business equipment has been appointed systems adviser for Hull-based Alverton Computer Systems. Harry Homer spent 14 years with NCR, 1964-78 when he became co-director of a small micro and office equipment supply company. He remained with the firm until joining Alverton earlier this year as software/system sales liaison officer.

Dale Atherton has been named by Tech-Nel Data Products, the Banbury-based manufacturer of data communications management systems, as export sales administrator. He joined Tech-Nel seven years ago as a production assistant.

Charles P. Spector is now Apollo's president and chief operating officer. He joined Apollo in 1980, after 12 years with Digital Equipment Corp. most recently as group manager of the Manufacturing, Distribution and Control Products Group.

Burroughs Europe-Africa Division, based in London, has appointed Gunner P. Heise as director of marketing. He was previously director of marketing, Office Information Systems, for the international division of Sperry based in London.

## DIARY

**NOVEMBER 24-25**  
Fault Tolerant Computing, a Xephon seminar for DP managers, operations managers and technical services managers in IBM installations which require systems with 100% availability. Holiday Inn, Swiss Cottage, London. £370. Further details from Mary Haines on (0628) 74922.

**NOVEMBER 30**  
CAD Modelling seminar, Computational Mechanics Centre, Southampton. Further information on (042) 129-3223.

Alimand Computer Systems has appointed to its team of banking consultants Stephen Newman who joins the company with 14 years' computer experience; four years having been spent on Swift related software design and implementation in Switzerland, Germany and Belgium.

Stone International announces the appointment of D. Leighton Davies in a non-executive capacity to the board. Davies recently retired at the age of 55 after 14 years with Ralac Electronics where he was deputy managing director of the parent company and chairman and chief executive of the Ralac Data Communications Group. He will continue his association with Ralac in a consultative capacity. Davies' background also includes 10 years with the Solartron Group followed by senior appointments with GEC and STC where most of his time was concerned with the industrial application of electronics.

Cotex (UK) the Ascot-based supplier of boards and systems, has appointed Peter Russell as UK sales manager. He joins from Mostek where he was a field sales engineer responsible for technical liaison with large OEMs, systems houses and other large users of microprocessors. Prior to that he was with Lock Distribution, an Oldham-based systems house which is a dealer for Mostek and other component manufacturers.



Consultants (Computer & Financial), a City-based software house, has appointed Simon Farmer (above) as systems development manager with responsibility for development of the securities industry related products Fiscal and Tims. He joins from Centreline, where he was responsible for systems development in the investment management areas.



Adrian Waters, who has obtained an upper second class honours degree at Brunel University, Uxbridge, joined Rediffusion Computers in October 1983 as a sponsored student and took a two-year BSc degree in computer science. He will now be based in Cranbury, as a programmer in the department planning department of Rediffusion Computers. Waters (left) is pictured with Gordon Peaks, technology director, receiving a presentation for the successful completion of his course.

Continuing growth at Automation and Power Systems of Brighton has led to the appointment of Tim Worley as production manager. Formerly of Rediffusion Computers, he will be responsible for production activity, material control and purchasing.

Paul Brankin, has been appointed managing director of Oxford Automation, makers of System 86, the microprocessor-based range of equipment for distributed monitoring and control of industrial processes. Dr Brankin has been with the Oxford Instruments Group since 1974 and was previously technical director of Oxford Medical Systems. Tim Cook becomes general manager of Oxford Analytical Instruments of Abingdon, and takes over responsibility for that company's activities in the manufacture of systems for industrial analysis and quality control.

Andrew Rodger has been given wider responsibilities within Computervision's European Support Centre in Hayes, Middlesex, since his recent return from an extensive management development programme at Computervision's headquarters at Bedford, Mass. He has been promoted to manager, Europe Communications, and now has corporate and strategic responsibility for marketing communications, public affairs, Press relations, user, internal and international conferences and the training of sales, support and applications engineering staff throughout Europe. He joined Computervision from the Bosch Group in 1981.

Datafile has appointed Joe Makin as sales manager to head its sales force, marketing Mitec PABXs, and ancillary telecommunications equipment. He has spent the past 12 years with L.M. Ericsson/Thorn Ericsson and has recently returned from an assignment as sales manager in Riyadh, Saudi Arabia. Before that he was London sales manager for Thorn Ericsson Private Systems.

Counting House Computer Systems has appointed Dave O'Hara as UK sales manager. He joined Counting House as a sales and marketing executive in October 1982, and before that worked as Northern sales executive for MDSI (UK).



Tricia Carter has joined Anker Data Systems as product development manager responsible for the development of new products and liaison with software houses and computer manufacturers. She was previously product support and OEM sales manager with Omron. She has also worked for ICL and Singer Business Machines.

Computervision has appointed Gordon Moultrie to the newly-created post of marketing communications manager in the UK. He was previously with BOC, where he spent seven years in various publicity posts.

Geest Computer Services has named Mark Hallett as sales and marketing manager, and Rob Farrar as systems and support manager.

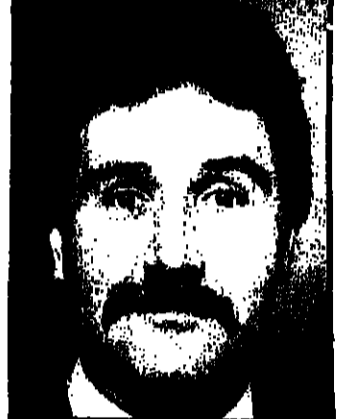
Ron Savers has been appointed general manager of IMX Systems Corp (UK), the British-based subsidiary of the international Imax Systems Group. Having represented the Canadian-based parent company in the UK for over a year, he is to develop the training and consulting activities of the UK company in support of the group's family of data dictionary and productivity tools.



Following its acquisition by Thorn EMI, Maidenhead-based automation and robotics company Hazmac (Handling) has announced five board appointments.

John N. S. Deane (centre) has been appointed managing director, with Ashley Thomas (left) as marketing director and Christopher J. S. Baker (right) as finance director. All three have recently joined Hazmac.

The company's founders Joseph Hazleton (second left) and John MacSwan (second right) continue as executive directors: Hazleton as commercial director and MacSwan as operations director.



Nixdorf has formed a new major projects division to market its point-of-sale systems to retail organisations in the UK. Richard Bearpark (above) a senior Nixdorf executive, has been appointed manager. He was latterly manager of Nixdorf's London West branch.

ICL announces the appointment of Tim Cullinane as managing director of ICL New Zealand. He succeeds Tony Neville who is returning to a senior management position with ICL in the UK. Before this appointment, Cullinane was managing director of MDS Computer Systems based in Sydney, Australia. He previously worked in Wellington, New Zealand, as general manager of the Equipment Division of Computer Consultants and was a director of that company.

Derek Kellett (above) has joined Rediffusion Computers as a senior territory manager for the OCR sector. Previously he was with Beam Business Centres as business centre manager; 1981-1983; CMC as a territory manager 1980-1981; and Database as sales manager for three years. Brian Coote has been appointed Rediffusion Computers' branch manager for the London South branch. He was previously with Wilkins Computer Systems as a director; and from 1976-82 was a salesman at IBM (UK).

Alan Redhouse has been appointed managing director of Byetech Security Print, the Tees-side subsidiary of Norton Opax of Leeds. He has been marketing director since the company opened 10 months ago. He was previously a senior sales executive with Sperry Computer Systems. Byetech has also appointed Jim Berrington as technical sales manager and Paula Ware as sales manager. Berrington was formerly with Warner Electric and Ware joins from Goldsmith Computing.

Dataproducts Corp announces the election of Glenn E. Peniston and Jack D. Steele to its board. Peniston is chairman of the board of American Microsystems Inc, a subsidiary of Gould, and board chairman of the American Electronics Association (AEA). Dr Steele has been Dean and Professor of the School of Business Administration at the University of Southern California since 1975.

Appointed managing director of Holland Automation International (UK), David Change, joins the company from Advanced Digital Office Systems (ADOS), where he was a founding director in 1980, and subsequently its managing director. Before that he was systems and programming director with Buntal Data Systems for three years. He also spent three years with Systime, and ten years with Pilkington Brothers.

Newbury Data Recording has appointed John French as national account sales manager. Before joining Newbury Laboratories in 1976, he was a sergeant in the RAF.



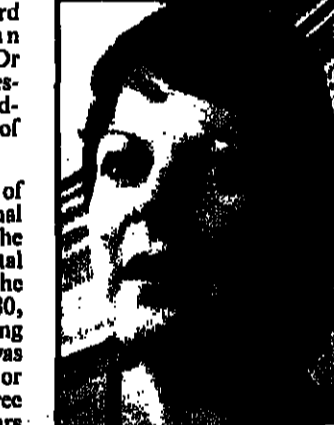
Precision Software, which specialises in software development for the Unix operating system, has appointed Kaye Matlock as senior analyst/programmer with GTR, specialising in sales order entry work on the Data General Eclipse range. She also spent two years with Leasco Software again as an analyst/programmer involved in development work.

Michael O'Connell, has been appointed national sales manager of the newly-formed Business Systems Division of Chubb Cash Registers. He was a service engineer with Gross Cash Registers at the time of the Chubb takeover.



Alan Steeles has joined Mastercare as materials manager. He was previously sales manager at Hachi in the UK and prior to that materials manager at Dissons Photographic.

Corporate Modelling Consultants, a specialist financial modelling systems house, has set up a new sales office in York, headed by Christine Carter (below) manager of Corporate Modelling's North of England and Scotland sales region. She has five years' experience in the computer industry, firstly in London and Brussels for ADP Network Services as a technical consultant and then as a sales executive. Her next job was with Generale de Service Informatique, a computer time-sharing service, and she worked first in London as manager of the London sales district and then in Paris, as business development manager.



See pages 32-33 for this week's new products.

See pages 32-33 for this week's new products.

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## THE RICHARD PICK AWARD

Not many people have an operating system named after them. Richard Pick has, and as the originator of the multi-user operating system that bears his

name, has been called a technical wizard. His Pick operating system (known as Pick) has numerous devotees but it has only recently started to win over and

attract a wider following. To stimulate interest in Pick, Electronic Data Processing (EDP) of Sheffield, one of the earliest large scale users of Pick, is offering £3,000 in

price money to the individual who can best explain the merits of Pick. A review of Pick, and details of the competition, and a coupon are set out below.

# Pick out Pick's merits and win a £1,500 prize

LISTENING to many Pick users is like listening to people who have undergone a religious conversion. The enthusiasm is tangible. There are installations worldwide and yet many data processing managers are unaware of the Pick system and its attractions.

Vendors, despite impressive user lists, have not been successful in gaining for Pick the market recognition which, for example, Unix has achieved. Only in recent months, with the entry of numerous new Pick vendors, has interest begun to burgeon.

To heighten the interest and promote Pick awareness, Electronic Data Processing (EDP) of Sheffield, which has the exclusive distributorship for the Mentor implementation of Pick, is offering £3,000 in prize money to winners of what it calls the Richard Pick Award. See details in the panel on this page.

The Pick operating system has its beginnings in the early 1960s but it was not until the early 1970s that the first commercial implementation was completed. The Microdata Corporation had a process control computer, and saw an opportunity to increase the market for its machine by implementing Pick and turning it into a business system - the Reality.

It was marketed in the early and mid-1970s by Microdata's then agent company in the UK, CMC. Microdata gained substantial numbers of users worldwide, and made Pick users eager for more diverse systems. Those users with the largest investment in Pick applied software - mainly US based Microdata dealers - began to seek alternative hardware on which Pick could be implemented.

One of the first was a Prime system called Information. It was not produced in conjunction with Pick, and is consequently somewhat at a tangent to mainstream Pick. Information also requires the presence of the Primos operating system, and therefore a large machine to run even a few terminals, and has not to date sold in large numbers.

Much more successful has been the implementation of Pick on Honeywell Level 6/DPS6 by the Ultimate Corp. Ultimate was formed by a number of former Microdata dealers.

Level 6/DPS 6 hardware architecture, however, is actually more powerful than the Pick operating

system requires. This caused a number of manufacturers to believe that a machine built specifically to run Pick could be brought to market at much less cost than Ultramax.

The first of these was Applied Digital Data Systems Inc. (ADDS), a wholly owned NCR subsidiary, which launched its Mentor family in mid-1981. ADDS appointed EDP as its UK distributor, and Mentor was launched here in September 1981.

Other Pick implementations have followed in rapid succession. Ultimate responded with its 1000/2000 range. Datamedia, General Automation and Pertec have all recently introduced versions, and there are now no less than three implementations on IBM equipment - the PC, Series 1 and 4300 models.

Pick enables multiple users to enter, instantly retrieve and update any information stored in the online database. Users interact with the system via local or remote terminals, accessing files that may be private or shared. The highlights of the systems are:-

■ A virtual memory operating system which permits addressing of disc storage and allows main memory to be dynamically assigned.

■ A database management system which is an integral part of the O/S and provides an extremely high level of performance.

■ Data storage in a three dimensional variable length format which may vary dynamically in size, making it exceptionally easy to change the size of or add data to a file.

■ A hierarchical file structure providing efficient disc utilisation, fast data access and selectable levels of data security.

■ Record access directly via the item-id, sequentially using a hashing technique or in sorted sequence.

Many systems now boast user-friendly report generation tools, but few match the Pick query language, variously termed English, Recall, Access, Info, and others. English is a dictionary driven database enquiry language with free form syntax, simple enough for non-programmers to use, yet powerful enough to allow the instant generation of almost any kind of report from the database.

The main programming language is Data Basic, which is an expanded subset of Basic.

## THE RICHARD PICK AWARD

1ST PRIZE £1,500

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The prizes will be awarded for original essays of 2-4,000 words which describe in layman's terms the benefits of the Pick operating system to the end-user. Competitors must be currently employed at a Pick user site or have been employed at a Pick user site at some time between now and January 1, 1984. Employees of EDP, Computer Weekly and DMW are not eligible.

Closing date for entries is January 27, 1984. Entries will be judged by James Martin, DMW Group chairman and an internationally known consultant on database systems, M. I. Jamieson - EDP technical director, and The Editor, Computer Weekly. Please clip the coupon for an entry form.

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Reed Exhibitions has organised an impressive promotional programme for The Computer Trade Show '84 with direct mailings to selected visitors to the COMPEC series of exhibitions and to the entire circulation of the sponsoring magazines. Editorial previews of the exhibition in the sponsoring journals will ensure that interested buyers are at its height in the crucial period just prior to The Computer Trade Show '84.

With this kind of backing it is no wonder that an important number of computer companies, like Digital Equipment Corporation, Perkin Elmer, Roda, Norsk Data, General Automation, Rediffusion, Geveke, Newbury Data and Multicomputer, have already booked stand and space at the show. So, if you want to be sure of meeting thousands of business buyers with bulk purchase at the forefront of their minds you must reserve your stand space at 'The Computer Trade Show '84' by clipping the coupon below, or better still phone Gillian Johnson on 01-661 3125 NOW!

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## Conference Programme

### 7 February 1984

#### Day 1 Morning

**Chairman's introduction**  
David Fairbairn, Director, NCC

**Most significant trends**  
Mike Reidy, Senior Consultant, IDC Europa

**Systems Architecture — the options**  
Will Zachmann, Vice President, Corporate Research, IDC  
Single, tandem or multiple processing  
Choice of operating systems for multiple processors  
Separation of data handling procedures (database, dataflow, file servers)

#### Afternoon

**Chairman's introduction**  
David Craver, Editor, Computer Weekly

**User Software — the options**  
Reg Boot, Group Director, Training and Software, NCC+Research IDC  
Package or custom  
Choice of software development tools and standard methodology

**Fons Kuypers, Consultant, IDC**  
Are program generators viable and usable?  
Expert systems for users?

**Human Interface — the options**  
David Hebditch, Consultant  
Keyboard/voice input; multifunction workstations; computer graphics  
What value are multifunction workstations (LISA etc)?  
Are computer graphics important, is colour necessary and how important is resolution?

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**PLAN IT84 Conference,  
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### 8 February 1984

#### Day 2 Morning

**Chairman's introduction**  
Peter Rowell, President, IDC, USA

**Human resource — the facts**  
Dr John A. G. Thomas, Publishing Director, Computer Weekly  
Deputy Managing Director, Electrical-Electronic Press.  
John Griffith, Group Director, NCC  
Salaries and trends;  
staff turnover, finding, training and keeping good staff;  
role of the IT supremo; concept of the Information Centre

**Communications — the options — 1**  
Martin Healey, Professor of Microprocessor Engineering,  
University College, Cardiff  
Local Area Networks Star, Ring, Ethernet.

#### Afternoon

**Chairman's introduction**  
David Fairbairn, Director, NCC

**Communications — the options — 2**  
Professor Martin Healey  
Dr. Peter Scott, Senior Consultant, Product Strategy Group, NCC  
Wide Area Networks (WAN)  
Location of people, data and processing  
The modern PABX  
Appropriate protocols for Viewdata  
Teletex  
The standards issue  
Keith Bartlett, DOTI  
Intercept Strategy  
Users of the world UNITE!

#### Panel Discussion

**Application of AI — the options**  
Brian Oakley, Director, Alvey Programme

#### Chairman's Summary

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Candidates must be specialised in training in PL1, Fortran, TSO/SPF CMS in an IBM environment operating under MVS/JES2 and/or VM.

In addition, a sound knowledge of the oil industry and the ability to communicate effectively is essential.

### Systems Analysts

Candidates should either be degree qualified with 5 years IBM D.P. experience or a minimum of 8 years IBM D.P. experience. A sound knowledge of MVS, VM, SAS, TSO/SPF, PL1 and/or Fortran is desirable. Previous experience either as an instructor or working as a member of a project team is an advantage.

**Knight**

Confidential Reply

## Senior Systems Designer/Programmer

Hertfordshire

£14,500

J.G. Systems Ltd is a highly successful Systems House engaged in the development of a wide range of commercial applications, packages and tailored software. The company also provides consultancy at Systems Design level based on CIL mini computers.

The Senior Systems Designer/Programmer will be responsible for the design, programming and implementation of commercial software and packages, and providing support and maintenance of that software. Additional responsibility will be for the management of a project team.

Candidates should be able to demonstrate experience in the following disciplines:

- \* 4 years Programming/Design of on-line Transaction Processing systems
  - \* COBOL programming
  - \* Accounting, Stock and Purchasing, Order Entry systems
  - \* Mini computers (CIL an advantage)
- J.G. Systems use their own CIL 8020 and CIL 8046 computers to provide in-house software development and customer support. Find out more - contact Knight on 01-491 4706 quoting ref YY401.



## Senior Analyst/Programmer

N. London/Essex

£12,000

Ozalid UK Ltd is one of the UK's leaders in design engineering reprographics and is part of the international Oza Group.

The company operates an extensive national network, encompassing a vast range of on-line applications linked to their Honeywell Level 64 DPS8 computer running under GCOS. Significant developments are in hand to cover all the company's systems including Manufacturing, Distribution, Warehousing, Marketing, Sales and Finance.

To continue their expansion policy, Ozalid wishes to appoint a Senior Analyst/Programmer (reporting to the Systems and Programming Manager) to lead one of the system teams through all aspects of development and to enhance and maintain existing systems. Candidates will be self motivated, have the

confidence to liaise effectively with all levels of management and have experience in the following:

- \* 5 years plus commercial DP
  - \* 2 years analysis/design
  - \* Cobol programming background
  - \* Honeywell mainframe experience desirable (not essential)
- Find out more - contact Knight on 01-491 4706 quoting ref YY400.



Leaders in Reprographic Equipment & Materials

## Systems Manager - New Zealand

Start the New Year with a new lease of life in a country that offers beautiful scenery, a pleasant climate and varied social interests. A part of a British international group, our client is a major industrial company located at Wellington.

Plans are underway to provide state of the art Data Processing facilities to all areas of the organisation with the proposed installation of dual Data General MV8000 computers. This will involve the development of their main application areas - Financial, Manufacturing and Distribution and include on-line processing facilities.

The Systems Manager will report to and deputise for the Computer Services Manager and will have direct responsibility for co-ordinating the successful implementation of the company

systems as well as managing and controlling all stages of projects from feasibility through to completion.

Candidates, ideally in their early 30's should be able to demonstrate proven managerial and technical qualities. This position would suit an experienced member of a similar sized installation or a Senior Project Leader of a large computer department.

In addition to a competitive salary, the successful candidate will be offered a benefits package that includes a company car, medical insurance, telephone rental and pension scheme.

The interviews will be conducted in London in early December. So, don't delay - contact Knight on 01-491 4706 quoting ref GK620.

## IBM 4381

The following expert staff are required to form the technical nucleus of the newly-expanded Computer Department of the Royal Oman Police. Micros, minis and word processors are already in use and an IBM 4381 is on order. The Royal Oman Police is an expanding and progressive Force with wide-ranging responsibilities including Customs and Immigration.

### A) TECHNICAL SUPPORT MANAGER

Minimum of eight years' IBM experience of which at least five years must have been in an IBM software support role in an online, realtime environment using MVS, TSO, IMS, CICS and JES2. Thorough knowledge of this software and Assembler required. SNA an advantage.

### B) DATABASE ADMINISTRATOR

Minimum of eight years' experience of which at least three years must have been spent as a database designer or database administrator in an online, realtime IMS/CICS environment. Must have been responsible for the design and implementation of at least one large and complex IMS/CICS database.

### C) PROJECT LEADER

Minimum of eight years' IBM experience of which at least three years must have been as a chief systems analyst or project leader in an online, realtime environment using MVS, TSO, IMS, CICS, JES2 and COBOL. Database design experience an advantage, as would be a knowledge of SNA and PL/I.

### D) OPERATIONS MANAGER

Minimum of eight years' IBM experience of which at least three years must have been as an operations manager in an online, realtime environment using MVS, TSO, IMS, CICS and JES2. Experience in installation planning an advantage, as would be a knowledge of SNA.

Those appointments are offered on contract terms of service for an initial period of two years. Conditions of service include tax-free annual emoluments of the equivalent of approximately £18,750 at the current rate of exchange, and normal benefits associated with working overseas including furnished air-conditioned accommodation, car and medical treatment, with 60 days' leave per annum and an end of contract benefit equivalent to 25% of the basic salary.

Applications with detailed curriculum vitae attached and two recent passport size photographs should be forwarded, not later than 15 December, 1983, to:

Inspector General of Police and Customs  
Attn: Assistant Inspector General (P&T)  
Royal Oman Police, PO Box 2, Muscat, Sultanate of Oman (6558)

### THE SERVICES SOUND AND VISION CORPORATION

## ANALYST/PROGRAMMER

To meet our expanding computer installation we have a vacancy for an Analyst/Programmer. Experience of Honeywell TPS and Screen writes or Database is essential. Cobol and online system experience would be an advantage.

Main objectives would be to direct and co-ordinate the investigation, design and introduction of data processing procedures to meet required business needs.

Working conditions are excellent. Salary c.£10,000 per annum.

Good Pension and Life Assurance Scheme is available. Free Lunches are provided and there is an Assisted Travel Scheme.

Applications in writing are invited from Programmers with at least two years' experience.

Apply to:

Mrs A. R. Sive  
The Services Sound and Vision Corporation  
Chalfont Grove, Narscot Lane  
Gerrards Cross  
Bucks SL8 8TN (6544)

### COGENT SYSTEMS LIMITED

## HP3000 PROGRAMMERS

COGENT Systems Limited is a software house which specialises in projects on the HP3000 and on microcomputers.

We currently need more programmers for our on-line projects in North Herts and Bucks. A minimum of one year's experience of COBOL, IMAGE, QUERY and VIEW on the HP3000 is required. These jobs are excellent opportunities both to broaden and to consolidate your experience, working with extremely competent analysts/programmers in an exciting and go-ahead environment.

We pay top salaries.

Write in confidence with details of your experience to:

Mr Robert Green  
COGENT Systems Limited  
251/253 Finchley Road, London NW3 5LS  
Tel: 01-794 0179/794 0170 (24hr) (6570)

### EDUCATION DEPARTMENT MONKWEARMOUTH COLLEGE OF FURTHER EDUCATION DEPARTMENT OF SCIENCE AND TECHNOLOGY

## LECTURER I IN COMPUTING

£5,849 - £9,735  
Applicants should possess suitable qualifications in Computing, together with appropriate teaching experience, or experience of computers in Business.

Duties to commence 1st January, 1984, or as soon as possible thereafter. Application forms and further details available upon receipt of a stamped, addressed envelope, addressed to: Monkwearmouth College of Further Education, Swan Street, Sunderland, SR8 1EB. Closing date for applications: Friday, 2nd December, 1983. (6581)



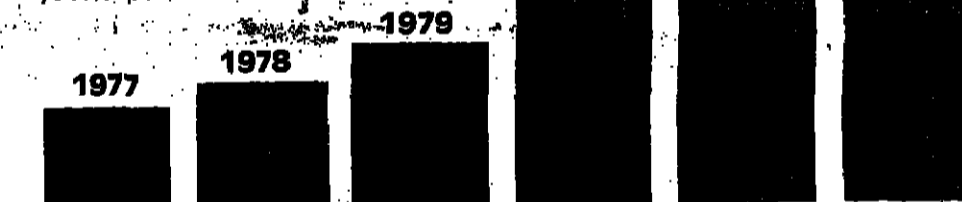
**borough of  
sunderland**

## Twice this year we've advertised for Development Professionals. Twice this year we've successfully recruited the people we were looking for. - So, why are we doing it again?

Our technological foresight has gained us a world-leading position which we are determined to retain. This year's recruitment campaigns were very successful, but to further progress and extend the range of our development projects, we need more Product Architects, Senior Designers, Real Time Software Engineers, Microprocessor Design Engineers and Technologists, at various levels, in the following specialisations:

Mainframe Protocols • Real Time, Multi-Tasking Software Communications Processors • Networks, Wide and Local Communications Protocols X25, PAD, X121 Digital Signal Processing - Modems Message Switching/Mail Systems Network Management Systems Statistical Multiplexing

Starting salaries will be from £10,000 - £18,000 p.a., depending on the extent and relevance of your experience and qualifications.



The increased scope of our activities, and the investment we make in R & D, means we can confidently predict continued growth, and thus your rapid career progression.

Call Chris Burns, our Personnel Officer, on (0923) 33500. Ask to speak to one of our development managers in your area of specialisation. Or arrange a time to visit our office, and see for yourself how far in advance we are. Alternatively write, for further details, to him at:

**CASE** Computer and Systems  
Engineering PLC, Caxton Way,  
Watford Business Park,  
Watford, Herts. WD1 8XH.  
*You'll be convinced that the future lies with CASE.*

### PROGRAMMER/ANALYST

£9,500 + BONUS

A forward thinking firm of solicitors require a go-ahead individual to join their small DP Department and to play an important role in the continued development and maintenance of its on-line systems. The successful applicant will have had a minimum of two-three years' COBOL experience in an on-line environment, preferable with experience of Honeywell Level 6. Relocation expenses will be paid, where necessary.

Please write enclosing full cv to:

Steven, Drake & Pope  
Midland House, 117/119 High Street, Crawley  
West Sussex RH10 1DD (6582)

## URGENT!

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DOS VSE VM CICS Operator  
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24 Hours

**Knight Computer Services Ltd**

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## PRODUCTS

### Program standard EPROMs

WITH the new PMS-8100 portable programmer, Siemens claims to offer the user a universally applicable, low-cost, portable unit for programming standard EPROMs. The compact, easy-to-handle programmer is suitable for laboratory use in conjunction with Siemens' PMS-T85S testing and development system.

The EPROM programmer is intended to be used as an extension of the Siemens SMP microcomputer expansion board system. The EPROM type and the required commands are entered via the programmer's keyboard. The repeat key provided can be used to enter repeat commands.

The current configuration of the PMS-8100 allows the programming of six EPROM types (2516, 2716, 2732, 2732A, 2764 and 27128). Four minutes is the programming time for an SAB 27128, including the implementation of a high-speed programming algorithm.

This programmer is housed together with its switchable power supply (100/220V, 60/50Hz), in a



The PMS-8100 is easy to handle.

metal case. Typical power consumption is 19VA at an ambient operating temperature of 0-40°C. The unit measures 253x175x75mm and weighs

2.5kg. Siemens (CW), Siemens House, Windmill Road, Sunbury-on-Thames, Middx. TW16 7HS. Tel: (09327) 85691.

### Transmit voice with data at the same time

SOFTWARE Science is marketing the Datavoice data communications system, which provides simultaneous voice and high speed data transmission on existing PABX lines.

The Datavoice was developed and manufactured by A/S Elektrisk Bureau, a Norwegian telecommunications specialist. Software Sciences practically has worldwide distribution rights to the product.

The Datavoice simply plugs into the standard British Telecom telephone socket, enabling telephones and data terminals to share that single telephone line.

Speech and data are transmitted from the subscriber on the telephone line to the PABX room where another Datavoice station unit is placed, to separate the speech from the data.

This unit can be supplied in a similar box to the subscriber unit, but for larger users, a 19in magazine containing up to 10 station units plus power supply is available.

able. Five magazines can be mounted in a cabinet, and more cabinets can be added if required.

Datavoice gives full duplex high speed transmission of data up to 19,200 bits per second, in asynchronous or synchronous mode over a two-kilometre radius without affecting the normal functioning of the telephone or PABX, says Software Sciences.

The number of data terminals that can be connected through Datavoice is unlimited. A user can start with a single point-to-point Datavoice connection and add new subscribers according to requirements.

Mike Shone, managing director of Software Sciences, says: "We anticipate a large market for the Datavoice, which can solve a lot of problems."

"For example, installing data terminals, or moving them round the office, traditionally incurs expensive cabling - there is no such cost with Datavoice."

"And if you move offices, you simply take your telephone, terminal and Datavoice connection with you and plug them in at the new site."

"Secondly, the architecture of an office building may make conventional cabling impossible, but Datavoice will create a local area network anywhere that has an installed PABX."

The Datavoice is one of Software Sciences' range of office automation products, which also includes the Xionics set of integrated communication systems.

Software Sciences is one of the UK's leading systems and software houses with more than 12 years' international experience of advanced software development and effective implementation.

The company has over 600 professional staff and is part of the Thorn EMI information technology division.

Software Sciences (CW), Abbey House, 282/292 Farnborough Road, Farnborough, Hants. Tel: (0252) 544321.

## PRODUCTS

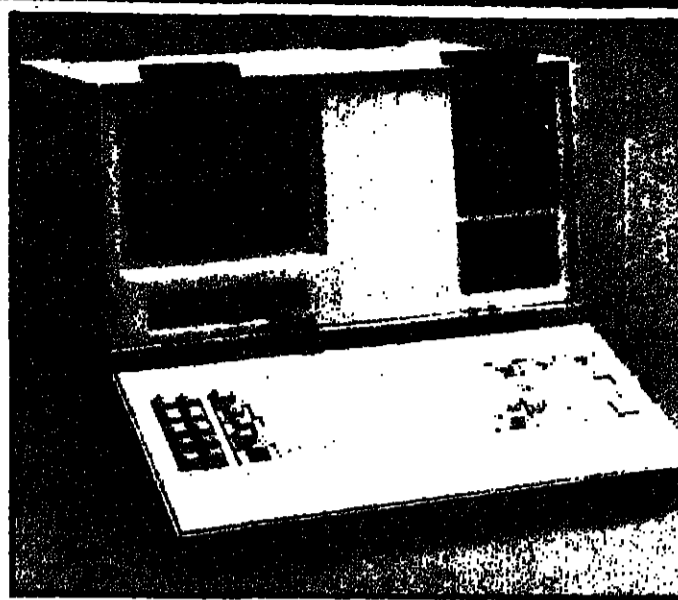
### Designed with travel in mind

A MULTIBUS-compatible industrial portable computer (IPC) for single-user, multi-tasking applications in industrial and scientific environments is being marketed by Arrow Computer Services. The unit, ruggedly packaged in a metal casing, is designed with travel in mind and fits under a standard aeroplane seat.

Manufactured by Monolithic Systems and designated the MSC8807, the IPC incorporates the Intel iAPX 186 processor. The system is forced air-cooled and includes a 9in screen, two 3.5in (Sony format) microfloppy disc drives each with 409 Kbytes of formatted storage capacity, six-slot Multibus chassis, and a 100w power supply.

Three of the Multibus slots are taken up with systems boards, and the other three are available for expansion. An 83-key ASCII detachable keyboard is contained within the lid. The keyboard has a numeric keypad and 10 special function keys.

A control panel under the screen



Monolithic Systems' MSC8807 marketed by Arrow.

contains power and system-reset switches, and a screen-brightness control. The rear panel contains I/O connectors and AC input/output connectors.

The three spare Multibus slots mean that Multibus-compatible devices such as expansion memories, controllers and high-resolution graphics, can be added to the IPC without modification. Both 8- and 16-bit devices with up to 24 address lines can be used.

Additionally, an on-board iSBX

bus interface connector permits the use of 8- or 16-bit Multibus piggy-back boards which are available with a variety of I/O and expansion capabilities. These include parallel or serial I/O, fixed or floating point numeric co-processors, and analogue operation.

Arrow Computer Systems (CW), Arrow House, Blenheim Road, Longmead Industrial Estate, Epsom, Surrey KT19 9BA. Tel: (03727) 42557.

### Bull launches 90 pages a minute printer

BULL Peripherals UK has introduced what it claims to be the first high-speed magnetic printer commercially available to the OEM marketplace. The MP6090 performs at a speed of 6,000 lines per minute (90 pages-per-minute) and uses perpendicular recording technology to produce 240x240 dot resolution.

Designed and manufactured in France by Bull Peripheriques, the MP6090 is the first of a family of non-impact printers which will use virtually identical components.

Three primary Bull proprietary technologies are employed by the printer: A magnetic drum used in conjunction with perpendicular recording heads, and a single-component magnetic toner.

In operation, the magnetic recording heads record information on the magnetic drum. The drum rotates through the single-component toner, which is attracted to the magnetised regions

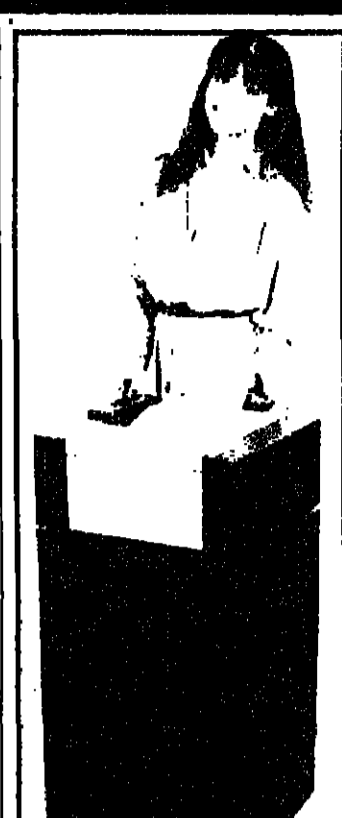
on the drum. The toner, and thus the information, is then transferred to continuous fanfold paper by a pressure-roller.

The MP6090 has been designed to allow the operator to perform scheduled head cleaning. Planned maintenance by trained personnel has been reduced compared to competitive high performance non-impact printers.

The system is offered with a line printer emulation capability which permits standard line printer formats, using multiple fonts in both landscape (horizontal) and portrait (vertical) directions.

The MP6090 uses blank or pre-printed fanfold paper, 7in to 15 1/2in wide. Standard features include from 10 to 15 characters per inch, with 90 degree page rotation and 6x10 lines per inch, four sets of 96 characters.

Bull Peripherals UK (CW), Kingswicks House, Sunninghill, Berkshire SL5 7BL.



THE Scimitar Super 3104 Electronic is a new general office shredder which can handle more than 10 streams of continuous stationery, and doubles as a data shredder. It is introduced by Business Aids. Tel: Sunbury-on-Thames 81758/9.

### Choice of 128 styles

THE versatile Epson RX-80FT matrix printer, now available from peripherals specialist PHL of Solihull, has many 'new' features, of which perhaps the most impressive is the selection of 128 character styles. Printing speed is 100 to 300 cps for high throughput, or 50 cps for quiet-mode for office use.

Sub- and superscripts and auto-underline are available. There are six programmable bit-image graphics modes, which can be mixed in any combinations on a single line.

The RX-80FT has both friction and tractor feed, accepting pin-feed paper from 4in to 10in wide, and cut sheets and rolls up to 8 1/2in. A Centronics interface is supplied as standard, with a range of other interfaces including IEEE488 and RS-232C available as options, allowing connection to almost any system.

Peripheral Hardware (CW), Unit 13, Monkspath Industrial Park, Highlands Road, Shirley, Birmingham, B90 4NY. Tel: 021-745 3033.

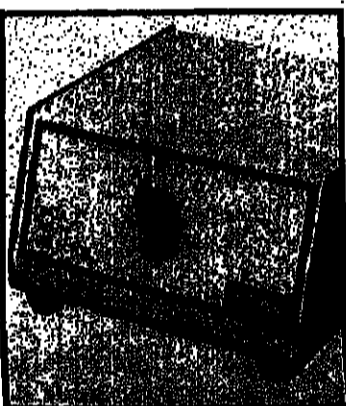
### Sharing resources

THE DRS5 data route selector made by Aims of Milton Keynes allows micro and other data processing equipment to share resources at the turn of a switch.

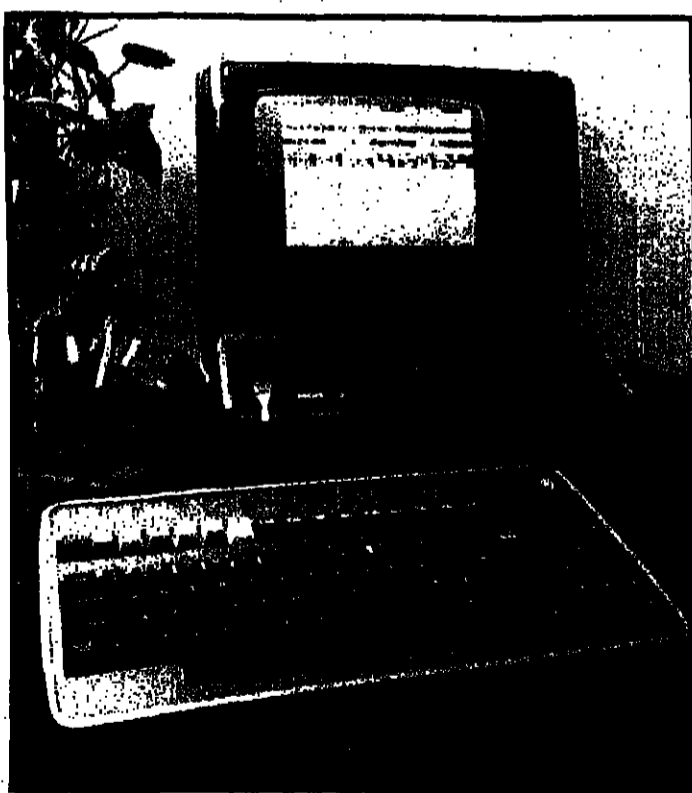
This top-of-the-range model costs £96 plus VAT and allows one common cable to be switched to any of four other data routes.

The DRS5 uses industry-standard RS232 female sockets, but the Aims range of data route selectors also includes models with IBM-compatible female co-axial sockets.

Aims (CW), 25 Pottery Lane, Kila Farm, Milton Keynes MK11 3HG. Tel: (0908) 562953.



The Aims DRS data route selector.



The model 1030 editing keyboard.

### Keyboard lets user sit back

PHILIPS has introduced an editing keyboard for viewdata terminals, the model 1030, to replace the model 1039.

The new model retains all the features of the 1039 - standard layout, separate numeric pad, graphics and colour keys - plus a number of new features.

The 1030 permits full operation of the Philips 3607 viewdata terminal, without the need to use the terminal's keypad. This allows the user to sit back and concentrate on the keyboard alone.

The Philips 3607 has 14 pages of

memory which can be used for preparation of response frames and mailbox messages off-line.

A line hold facility gives the user of the 3607 the ability to use the off-line features of the terminal, whilst maintaining connection to the viewdata computer. This allows last-minute changes to pages, for example, before or during transmission of information on-line to the computer.

TMC (CW), Philips Business Systems Viewdata Division, Road, Malmesbury, Wiltshire, MK44 3PH. Tel: (06662) 2121.

## CYNTHIA D 500 DISC UNITS:

The Cynthia D 500 range of 5 1/4" disc units, with six models from 6 to 72 Mb, offers the right capacity and performance for all applications:

- The Cynthia D 505 and D 510 units are

intended for all existing microsystem applications, with capacities of 6 and 13 Mb and a standard access time of 70 ms.

- The Cynthia D 520 unit, which consists of two discs, one fixed and one removable, has a capacity of 13 + 13 Mb. It is one of the first units of this type introduced on the OEM market. It is both a mass-storage and an operating unit, with an average access time of 40 ms.

## CONTINUITY.

- The Cynthia D 530, D 550 and D 570 units have an exceptional storage capacity - 31, 51 and 72 Mb - in a 5 1/4" standard volume and a very short access time of 30 ms. They are intended either for large memory applications, or for multitask or multiuser applications.

From the Cynthia D 505 up to the Cynthia D 570 unit, you'll get the same reliability, a full compatibility, and standard interfaces.

Such a continuous line of products means that the Cynthia Peripheral Division will remain your dedicated partner and will follow your growth: available today, it is already your tomorrow solution.

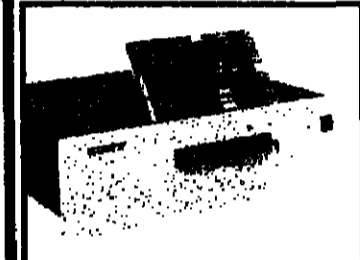
### CYNTHIA PERIPHERAL DIVISION

CYNTHIA PERIPHERAL DIVISION, 100, SUNNINGHILL, BUCKINGHAM, ENGLAND. TEL: (0990) 21391. UNITED KINGDOM.

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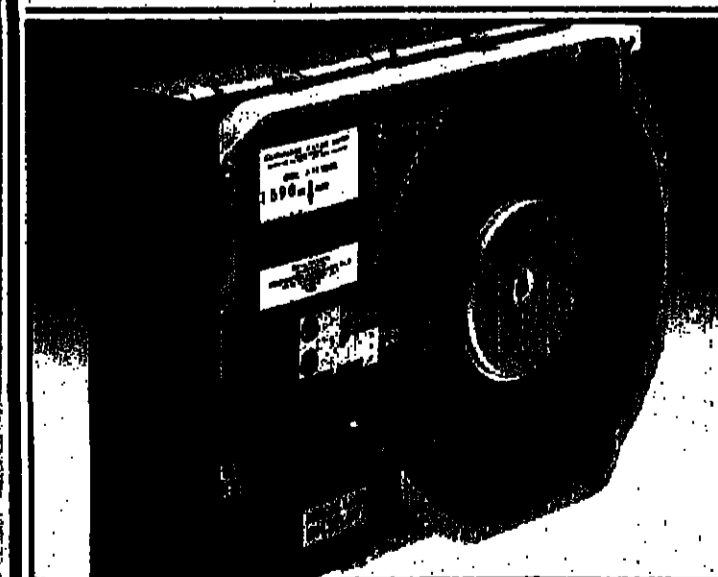
The CST CS-300 subsystem.

### Back-up for LSI-11 users

A STREAMING tape subsystem which provides the DEC LSI-11 user with up to 55 Mbytes of back-up storage for large capacity Winchester disc drives is announced by Computer Storage Technology.

The CST CS-300 subsystem uses a CC-300 peripheral processor and a 1/4in cartridge tape streamer based on the new QIC-02 cartridge interface of the Archive Side-winder of Cipher Quarterback tape drives. The subsystem also includes a 1/4in tape cartridge as the high-capacity storage media.

Computer Storage Technology (CW), 1369 S. State College Blvd, Anaheim, California 92806. Tel: 714/778-3656.



The Seagate ST212 12Mbyte half-height Winchester drive

### 12Mbytes on a disc

DESCRIBED as the first single-platter 12 Mbyte half-height 5 1/4in Winchester disc drive to incorporate low-inertia multilayer ferrite read/write heads for improved shock protection and increased track densities for faster average access times, is announced by Seagate.

The ST212 is designed for portable computers and desk-top

systems, and will withstand almost twice the shock specification of standard-height drives.

It operates at an average access time of 65ms.

The drive is priced at \$690 in 1,000-lot quantities. Single unit pricing is \$1,265.

Seagate Technology (CW), 920

FTB

## Programmers

IBM 3083  
DOS and VM  
to £10,500  
Thames Valley  
CICS Training

A major international corporation specialising in consumer products is looking to recruit 2 programmers with a minimum 1 year's IBM COBOL experience. The system is running DOS and VM currently with commercial applications.

The main involvement is with new development, undertaken in project teams, providing extensive opportunities for gaining experience in different areas. For candidates with no CICS experience full training will be offered.

Candidates must be conscientious and keen to develop their career path with the guidance of this highly successful company.

Salaries are aimed at recruiting and retaining high quality staff, and are backed by fringe benefits that would be expected of a company of worldwide repute.

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15 Clarence Street, Staines, Middlesex TW18 4SU  
Telephone: Staines (0784) 59247. Telex: 8814148

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IBM MANTIS COBOL PROGRAMMERS  
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IBM RAMIS EXPERT ANALYST/PROGRAMMER  
IBM ASSEMBLER PL/1 ANALYST/PROGRAMMER  
IBM MVS IMS DB/DC SYSTEMS PROGRAMMER  
IBM DOS/VS SYSTEMS ANALYST  
IBM IMS DB/DC COBOL SENIOR PROGRAMMER  
IBM IMS DB/DC COBOL SENIOR ANALYST/PROGRAMMER  
IBM SY/38 RPG/III MAAPICS PROGRAMMER  
IBM MVS TSO FORTRAN ANALYST/PROGRAMMERS AND PROGRAMMERS  
IBM MVS COBOL CICS PROGRAMMERS

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ICL OPS ANALYSTS  
ICL ME28 TIME COBOL TOP (NORTH) ANALYST/PROGRAMMER  
ICL VME IDMS COBOL PROGRAMMERS  
ICL VME COBOL IDMS TPMS PROGRAMMERS  
ICL VME COBOL PROGRAMMERS  
ICL DRS CICS COBOL PROGRAMMERS  
ICL SY/25 ASSEMBLER PROGRAMMERS - URGENT  
ICL VME IDMS TP OR TPMS - DATA DICTIONARY USEFUL COBOL PROGRAMMERS/IMPLEMENTERS - NORTHERN - JAN. START  
ICL 2900 GEORGE 3 IDMS COBOL ANALYST/PROGRAMMERS  
TECHNICAL AUTHORS

Computer Search and Selection,  
Hamilton House, Marlowes,  
Hemel Hempstead, Herts HP1 1BB.

Computer Search and Selection,  
8th Floor, Carolyn House,  
Dingwall Road, Croydon, Surrey CR0 9XF

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- Real-time Programmers and Senior Programmers with micro-based and communications experience (Multiplexors, Networks, Internals etc.)
- IBM COBOL CICS IMS Programmers and Senior Programmers
- IBM CLI CICS Programmers and Senior Programmers.

For further information please ring (02403) 22201 or send a full cv to HPSL Plymouth House, 7 London Road, Amersham, Bucks HP7 0HE.

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Outstanding opportunities to join progressive companies expanding rapidly in the U.K. and European computer industry.

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### 3 YEARS SYSTEMS AND 2 YEARS PROGRAMMING EXPERIENCE?

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Around £14,500

Central London

Sainsbury's is the UK's leading food retailer. Our half-yearly results showed a sales increase of 15.2%, profit was up 28.3% and six new supermarkets were opened during the period. Annual investment this year is expected to reach £175m.

Our Systems Department is vital to our on-going success and is rapidly expanding to satisfy business growth. We are currently changing from ICL to IBM hardware and our present configuration comprises IBM 3033 and Atlas 10 mainframes.

To maintain rigorous quality assurance standards and provide a basis for the future, we are introducing a new systems development methodology and new technical standards to support it.

The vital importance of these standards has been recognised by the creation of the new post of

### STANDARDS & METHODS CO-ORDINATOR

As the "custodian of technical standards", your prime responsibilities will be to co-ordinate the introduction of the new methodology and train staff in its use; develop, implement and maintain the system standards and design and implement the supporting documentation.

You should have at least 5-6 years' programming and systems experience plus a real interest in training and the development of professional DP standards. Good communication skills, a "hands on" approach and the ability to carry ideas through to fruition are essential. An O & M background could be useful. Career prospects are attractive in a rapidly developing environment.

Excellent benefits include:

- interest free season ticket loan, after six weeks
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- share option scheme after 3 years' service
- BUPA
- pension scheme
- relocation assistance, where appropriate

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Sales*	£100	1,359,897	1,179,988	+ 15.2%
Retail Profit		69,314	48,246	+ 28.3%

Interested in developing our standards and your career...then please telephone Lorraine Cathersides on 01-921 6047 for an application form or forward a detailed c.v. to her at J. Sainsbury plc, Wakefield House, Stamford Street, London SE1.

## MODUS

Modus Management Services Limited  
19 West Street, Dunstable, Beds. LU6 1SL  
Telephone: Dunstable (0582) 608002



## Hardware Expertise

### DESIGN - DEVELOPMENT - SUPPORT

### Junior/Senior Appointments £8000 to £20,000

Modus has a complete range of opportunities spanning the entire U.K. At one end of the spectrum there is an opening for a good junior to become involved in one of the most complex LAN's currently under development in the U.K. - going to the other extreme, one of our clients wishes to recruit a Technical Director capable of taking a MC68000 based system and turning it into a highly profitable product. These are all REAL jobs and we are determined to fulfil our client's requirements. We welcome your call. An initial chat with a Modus Consultant will be extremely useful in identifying a company, or group of companies, ideally suited to your specific requirements.

There are some terrific jobs out there -  
just waiting to be taken by the right person.  
It could be you...

## CAD Systems Engineer

Berkshire

to £13,000

**MARS ELECTRONICS** One of the fastest growing electronic groups in Europe, renowned for its technical excellence within the markets it serves, is introducing one of the most advanced CAD systems into its head office at Winnersh.

To assist with this introduction they are looking for a computer professional who will interface between the users and the computer system and provide technical back-up on a day to day basis.

Applicants will have an engineering background together with a strong bias towards software. Experience of Portran, PLE1 or PLM gained on 32 bit computers would be an added advantage.

Candidates will be able to implement system management procedures, advise users on queries or problems and develop and streamline their working techniques.

It is essential that you have good communication skills and have a positive attitude to CAD.

The company has extensive plans for future development of Computer Aided Engineering therefore long term career opportunities are excellent.

Please contact David Hendry

CADsearch, London House,  
271-273 King Street, London W6 9LZ.  
Telephone: 01-741 8011.



# Systems Programmers

Thames Valley

£12-14,000

**CAPP ASSOCIATES**  
01-686 9693

Copp House, 96d South End,  
Croydon CR9 3SD.  
International & UK  
Recruitment Consultants

Our client is looking for two technically competent Systems Programmers who want to develop their skills in a mainstream IBM software environment.

The company has an IBM 4341/2 processor running under VM and OS/VS1, with CICS, DL/I, APL, ROSCOE & UFO. Early next year it will implement MVS in readiness for a processor upgrade and network support under SNA.

You should have at least 4 years' IBM DP experience and 18 months minimum as a Systems Programmer with in-depth knowledge of VM or VS1 or CICS. Experience of MVS would be an advantage for one post.

A competitive salary will be offered, based on experience, as well as ample training and a good benefits package expected of a large company. For further information, please write or telephone (24 hour answer service) quoting ref. CW103-3D. Applications are invited from either sex.

(6721)

## Rare opportunities in the West Midlands

### PROGRAMMERS and ANALYST/PROGRAMMERS - PDP 11

Allied Carpets, part of the Associated Dairies Group, are one of the fastest growing retailers in the UK.

We are committed to computerisation and are in the process of installing computer equipment in our stores linked to our Head Office via an auto-dial system.

Our plans are such that we need to increase our small development team to enable work to proceed on a wide variety of projects.

To work in this enthusiastic and dynamic environment, you should have a minimum of 2 years' programming experience. We operate under RSTS/E using BASIC + and BASIC + 2 programming languages.

This is an opportunity to further your career gain job satisfaction, improve your prospects and at the same time receive an excellent salary dependent on experience.

Write now including a brief CV to:  
Mr. T. Ayling, Allied Carpet Stores Ltd.,  
Allied House,  
Lombard Street,  
West Bromwich,  
West Midlands  
B70 8RL.

**Allied Carpets**  
Britain's Finest Carpet Stores

(6726)

### FREELANCERS

Für langfristige Projekte in Deutschland, Österreich und in der Schweiz suchen wir für sofort/später (Softwarehaus) Hardware- und Software-Spezialisten mit mindestens 3 Jahren Berufspraxis auf folgenden Gebieten:

1. IBM 370, 30xx, 43xx, OS/MVS, DOS/VSE, CICS/DLI, IMS DB-DC, TSO/SPF, Assembler, Cobol, PL/I, IDMS, ADABAS, COPICS und andere mehr.
2. Netzwerk-Spezialisten: SNA, SINEC, Transdata, LAN-Konzepte.
3. UNIX-Spezialisten.
4. PDP11- und VAX-Spezialisten für Anwendungssoftware und Rechnerkopplungen.
5. Systemprogrammierer für MVS, DOS/VSE, VM, BS, 1000/BS 2000, CICS und IMS.

Die Zusammenarbeit erfolgt auf freiberuflicher Basis (eventuell auch Angestellter). Gern führen wir in Kürze in London ein Gespräch mit Ihnen. Übersenden Sie uns bitte Ihre Bewerbungsunterlagen an folgende Adresse:

Unternehmensberatung Koltrich GmbH  
z.Hd. Herrn Koltrich  
Rheinstraße 17  
8200 Wiesbaden, West Germany  
oder rufen Sie uns unter folgender Telefon-Nr. an: 01049-6121-39741.

(6645)

### Senior Operator

Brantford International Limited are one of the largest freight forwarding organisations in the UK and are expanding internationally.

The company operates a hardware installation at their head office at Barking, Essex, based on the ICL ME29 generation of equipment and are seeking a senior operator who will be responsible for the efficient running of day-to-day batch/real time facilities, the selection and training of operational staff, and liaising on the development and installation of peripheral equipment when required.

The successful candidate, probably 30 years plus, will have at least 12 months' experience on ICL ME29/2803/04 for similar equipment and will have proven supervisory experience.

Future prospects for the right applicant are extremely good and the importance of this position within the company will be reflected in the salary and benefits offered. Please telephone or write for an application form to Mr. R. Martin, Personnel Manager, Brantford International Limited, Royal House, East Street, Barking, Essex IG11 8EY. Tel: 01-594 7181 Ext. 285.

**Brantford International**

### Computer Personnel Excellent Career Opportunities

Our Clients are one of the leading software houses in the country who also have a thriving systems sales division. They have an excellent growth record since their formation four years ago and envisage continued growth in both the U.K. and the export field, in which they have a first class reputation. To assist in their growth they require the following personnel:

#### Sales Manager/Sales Director Designate WMC/CBS/428

The company have several dealerships with top quality hardware manufacturers which they market as a complete system using their own software, to a variety of small and large businesses. Your role would be to develop and expand the already established business.

Aged 28-40 you will have a sound track record in the computer hardware, software or related fields and have the potential to become Sales or Managing Director in a short space of time.

#### Project Leader WMC/CBS/429

The Project Leader will be responsible for supervising a team of programmers, who are taking ideas from inception to finished product in the areas of graphics, data base systems, languages and general commercial systems as well as undertaking a practical role yourself.

Aged 25-35 you will have several years experience as an analyst or systems designer in a mini or micro environment, BASIC, C or PLI languages using MS-DOS, CP/M, UNIX, or PICK operating systems would be advantageous although not essential.

#### Graduate Trainee WMC/CBS/430

Responsible to the Project Leader you will be involved in developing the next generation of products using 'State of the Art' hardware.

A graduate in computer science you should have an interest and flair in one of the following, graphics, database systems, language compilers or operating systems.

#### Rewards

All positions offer excellent salary packages, coupled with real prospect promotion and the opportunity of some travel abroad.

Please forward C.V.'s to Harry Chalmers, Director quoting the appropriate reference number and listing separately any companies to whom your details should not be sent.

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The Quadrant  
Barton, Surrey GU2 8AS

### TECHNICAL and OPERATIONS SUPERVISOR

Salary c.£12,000

The BMA is a professional association established for the promotion of medical sciences, and the maintenance of the interests of the medical profession. (Listed as a Trade Union under the Trade Union and Labour Relations Act 1974.)

The Job Reporting to the manager, Information and Systems Department, the Supervisor will assist in the growth and expansion of the computer services centre. He/she will advise on operating systems, systems software, telecommunication, hardware and related technical areas and also supervise the day-to-day operational and development work.

The Applicant Should have min. 3 years' experience in data processing and be able to illustrate managerial ability, together with keen mental agility.

The post carries a contributory pension scheme, together with 22 days' annual paid leave.

Full details of experience and qualifications should be sent to Mrs B. E. Dyer, JP, Personnel Manager, BMA, BMA House, Tavistock Square, London WC1H 9JP, to be received no later than 8th December 1983.

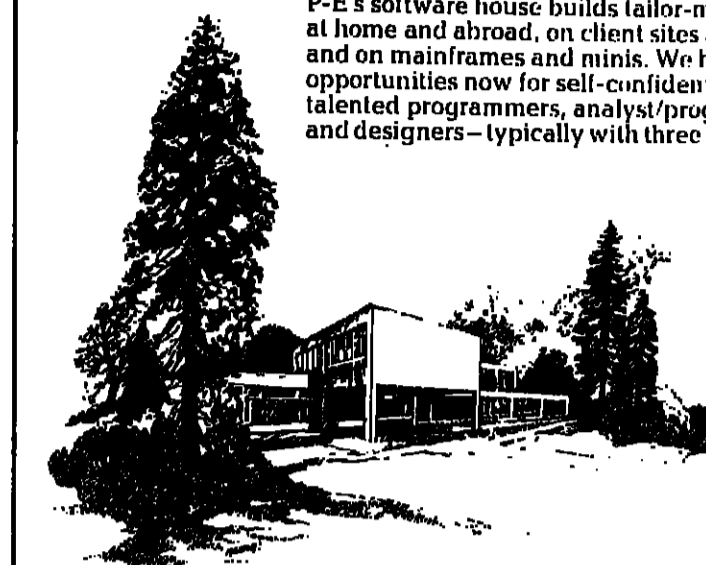
and observation and preliminary information available on request.

### PROGRAMMERS

### ANALYST/PROGRAMMERS

### DESIGNERS

P-E's software house builds tailor-made systems at home and abroad, on client sites and in-house and on mainframes and minis. We have opportunities now for self-confident, mature and talented programmers, analyst/programmers and designers - typically with three or more



P-E Computer Services Limited  
Park House  
Egham  
Surrey TW20 0LW  
Tel: Egham (0784) 344 11

(6673)

### SENIOR COMPUTER OPERATOR

The Equitable Life Assurance Society, a long-established but progressive and expanding company, has a vacancy for a Senior Computer Operator at its modern offices close to the centre of Aylesbury.

Our current installation is comprised of two ICL 2966s, an ME29/45 and we are planning to set up a branch communications network.

Applicants should have at least 3 years' ICL operating experience on DME/G2. Experience of VME and G2S would be an advantage. Ideally the successful candidate should be aged between 20 and 30 with at least 6 'O' levels, including Mathematics and English.

We operate a two-shift system (8.00am-4.00pm and 4.00pm-12 midnight) and candidates should either have their own transport or live within walking distance of the office.

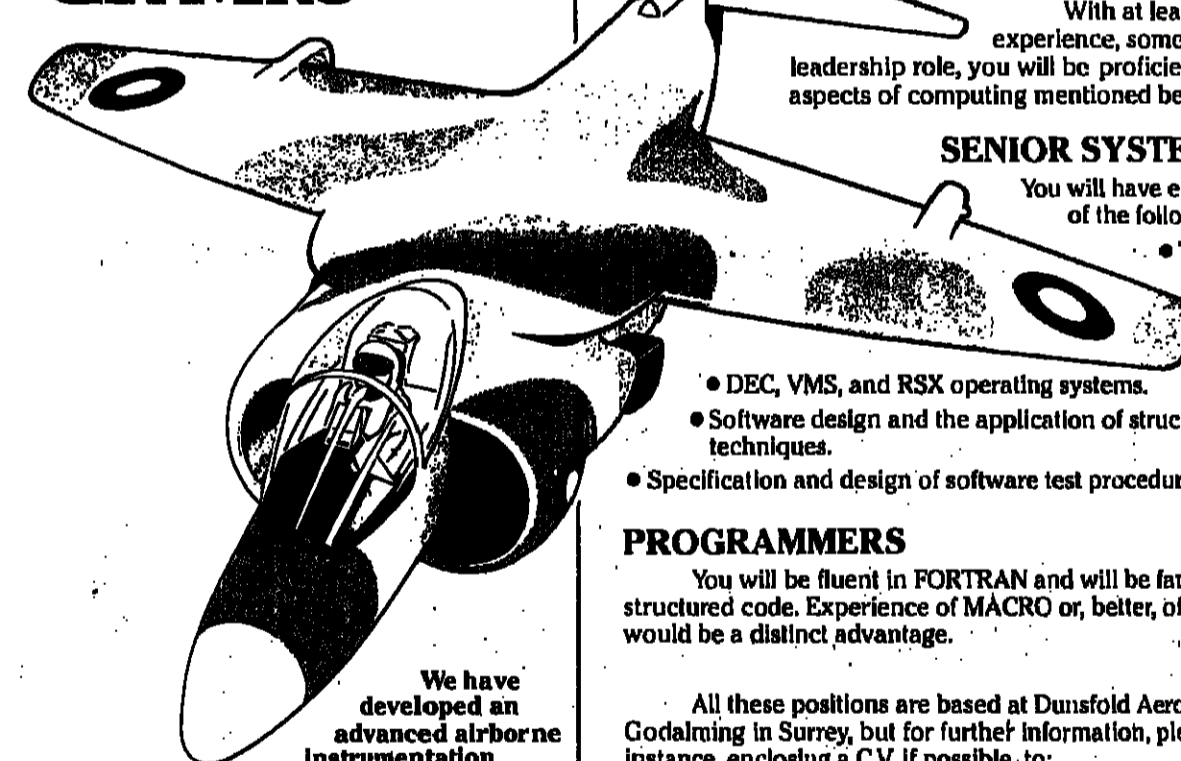
The Society offers competitive salaries plus an annual bonus. Other benefits include a non-contributory pension scheme, 20 days' holiday a year, a staff restaurant providing free lunches and the opportunity in the future to be considered for a staff house purchase loan at concessionary rates.

To apply, please write or telephone, indicating briefly how you meet our requirements to:

Mrs Carol A. Bird, Staff Assistant,  
The Equitable Life Assurance Society,  
Walton Street, Aylesbury, Bucks HP21 7QW.  
Tel: Aylesbury (0296) 33100.

The Equitable Life

### FLIGHT TEST- HARRIER GR Mk5



Unequalled in its range of job opportunities

#### PRINCIPAL ANALYST

Working from technical requirements, we will expect you to be a positive, conceptual thinker with a natural ability to develop practical systems and concise designing specifications. Ideally you should have an engineering or mathematical background.

With at least five years' relevant experience, some in a project or staff leadership role, you will be proficient in most of the aspects of computing mentioned below.

#### SENIOR SYSTEMS ANALYSTS

You will have experience of some of the following:-

- Technical requirements analysis and specification writing for software and computer hardware.
- DEC, VMS, and RSX operating systems.
- Software design and the application of structured programming techniques.
- Specification and design of software test procedures.

#### PROGRAMMERS

You will be fluent in FORTRAN and will be familiar with writing structured code. Experience of MACRO or, better, of MACRO 32 for VAX, would be a distinct advantage.

All these positions are based at Dunsfold Aerodrome, near Godalming in Surrey, but for further information, please write in the first instance, enclosing a C.V. if possible, to:

Mrs C Wiseman, Personnel Officer (Design), British Aerospace plc, Aircraft Group, Kingston-Brough Division, Richmond Road, Kingston-upon-Thames, Surrey KT2 5QS.

**BRITISH AEROSPACE**  
AIRCRAFT GROUP  
Dunsfold

(6672)

### INTELLIGENT TERMINALS LTD. SOFTWARE AND SUPPORT ENGINEER

Salary scale: £10,000-£11,000

Applications are invited for a new post with a company developing artificial intelligence software for industrial applications. An experienced software engineer is needed to assist in the production of an existing rule induction package, and in a follow-on technical marketing and support operation targeted on Europe and the Middle East. Applicants should have a sound acquaintance with artificial intelligence methods in general, and knowledge-based programming and rule acquisition in particular. Experience in hardware, in addition to a knowledge of FORTRAN-77 and of Middle-East software markets, is essential. A working command of Arabic is also requisite.

Please apply to: Mrs P. Montgomery, I.T.L. Room 14/2, Hope Park Square, Edinburgh EH8 9NW, Scotland.

(6753)

### ANALYST/PROGRAMMER

SALARY NEGOTIABLE

NOTTINGHAM

The RSC provides a distribution service for books and journals for many Publishers from its centre in Letchworth, using systems running on PDP 11/70s based in Nottingham.

We require an experienced Analyst/Programmer to work in a small team to maintain and enhance our on-line systems.

Applicants should have sound commercial experience, and knowledge of Basic Plus 2 running under RSTS/E.

If you are interested please telephone Mrs Lynda Tulley on 0602 57411 extn. 39 for further details.

(6754)

### BRISTOL POLYTECHNIC Computer Studies & Mathematics Department READER IN COMPUTING

Ref No L/80

Applications are invited for a Readership in Computing. Applicants should have a suitable postgraduate qualification and substantial experience in research/consultancy. The successful candidate will be expected to conduct and promote research and its commercial/industrial/social applications, to attract and organise externally funded projects and to extend the range of current collaborative projects.

The Department is active in a range of collaborative research and consultancy projects, some of which focus on Information Technology. There are three Research Assistants working on (i) a Knowledge Based System for Speech Therapy for Stroke Victims, (ii) Knowledge representation in Expert Systems, (iii) Information Requirements in Advanced Manufacturing Systems, and a Research Associate working in collaboration with Michael Jackson Systems Ltd.

Salary scale £12,519-£13,936 (bait) - £15,744 per annum. For further details and an application form, to be returned by 12 December, 1983, please contact the Personnel Office, Bristol Polytechnic, Goldharbour Lane, Fenchurch, Bristol or ring Bristol 66267, ext. 216 or 217.

Please quote Reference Number L/80 in all communications.

(6727)

# Senior Computer Operators

The Computer Operations department of STC Components — part of a major electronics group — is continually being expanded. The department's exciting plans include an imminent change from the Honeywell 66 Series equipment to the latest DPS 8 equipment.

Senior Computer Operators are required to take responsibility for the day-to-day running of the installation, to assist with the training of junior staff and the prompt solving of problems. Activities in the department include running TDS/Batch work under GCOS, supporting a 300+ terminal network, with Remote Level 6s, at offsite locations, offering Batch and Printing facilities.

Reporting to the Shift Leader, you would work a rotating shift system Monday to Saturday.

This is an opportune time to join this vital department and to make a real contribution to its on-going success. Stimulating new challenges will frequently come your way, providing valuable scope to enhance your skills and develop your career.

You should be aged 20-30, educated to 'A' level standard and have a minimum of three years' operating experience within a multi-processing environment. Highly competitive salaries are offered for these positions, together with an attractive range of benefits.

Please send full c.v. to G. C. Davey, Headquarters Personnel Department, STC Components, Edinburgh Way, Harlow, Essex. Tel. Harlow (0279) 26811

(0274)

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STC

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We are a division of the highly successful DP Support Services Group which recruits both permanent and contract staff for the UK Computer Industry and as a result of continued business expansion we are seeking to recruit staff for our Piccadilly W1 based offices.

If you can offer proven recruitment experience or two-three years' data processing experience coupled with a lively and tenacious attitude to succeed then telephone now to discuss your experience in confidence quoting reference WB241.

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"We look forward to hearing from you."

(0634)

## SENIOR APPOINTMENTS — £14K +

### SALES & MARKETING DIRECTOR

£35,000 + CAR

Our client is expanding its already successful operation. Significant in this expansion plan is the role of Sales & Marketing Director. This is a highly challenging opportunity and will be of interest to ambitious computer professionals who can demonstrate a successful track record with a computer manufacturer or service company. A knowledge of the peripheral market is also desirable.

If living London/Home Counties, telephone Don Linstead, GB Technical Services, 170, Piccadilly, LONDON W1V 9DD, 01-499 5308, for full details.

(0679)

### MICROPROCESSOR SYSTEM DESIGNERS

We are a specialist engineering company with an expanding electronics dept. manufacturing micro-based control equipment. We have vacancies for Hardware Designers/Programmers to design our newest range of products. Applicants must have experience of circuit design at chip level, and assembler programming (preferably 6502).

We are looking for motivated people to help the company grow. Pleasant location. Good salaries for the right people.

Apply to: Tim Hopkins, Permex Ltd., Lodge House, Lodge Road, Hendon, London NW4 4DD. Tel: 01-203 4243.

(0625)

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(0634)

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c.£20k Tax Free  
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Saudia, is now the twelfth largest IATA passenger carrier in the world and employs computers on a vast scale. In 12 cities and 8 countries our data networks link more than 1,000 computer terminals processing nearly 100,000 transactions daily and are used by more than 2,000 employees in their work.

Even greater expansion of our data services department is underway and we now wish to strengthen our team of computer professionals at our purpose-built data and communications centre in Jeddah. This modern operation supports a large IMS and CICS — based online operation, running on Dual IBM 3033 mainframes under MVS/SP1.3 with JES2. JES3 is planned for 1984.

### SYSTEMS PROGRAMMERS £20,000+

These are senior positions within our systems support group demanding a high level of professionalism and motivation. Successful candidates will be educated to 'O' level standard and have a minimum of 7 years' in data processing, the last 3 of which will have been gained on the installation/support of one or more of the following operating systems: MVS, VTAM/NCP, CICS/VS, IMS/DB/DC, all areas demand full knowledge of SMP.

### TERMINAL OPERATORS £17,500+

These key positions will require a minimum of 5 years' large IBM operations experience, the last 2 of which will have been gained as an MTO supporting an IMS online operation. In addition to console operations, you will provide a 'help desk' function and be responsible for training Saudi nationals. CICS experience would be a distinct advantage. The position is shift-based, covering a 24-hour a day, 7 days a week operation.

We offer a highly attractive benefits package which includes:  
★ Free villa or apartment in an attractive residential area.  
★ Superb recreation facilities with swimming pools, tennis courts and sports club.  
★ Subsidised schooling for children up to the age of 14.  
★ Free flights for you and your family to the UK with the opportunity for several home visits each year.  
★ Worldwide discount air travel.

These positions are open to men aged up to 55 on a 2 year renewable contract basis. Salaries are paid locally in Saudi Riyals (currently SR 5.2=£1) with no local income tax.

For informal discussion please call Peter Stevenson or Martin Kelly on

01-995 7755 ext. 138

or write with full c.v. to  
Area Personnel Manager, Saudia,  
508 Chiswick High Road,  
London W4 5RQ.



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## Teach Computer Programming at Preston Prison

We're looking for an experienced person to teach, as a Civilian Instructional Officer, the practice and theory of Computer Programming to prison inmates. Much your own boss After an intensive course on teaching techniques, you'll be given responsibility for implementing a training syllabus. Trainees are prepared for the City & Guilds Certificate 747, 748 and other appropriate equivalent examinations. Secure A steady job and a regular pay packet. Good working conditions Every effort is made to build an atmosphere which is as similar as possible to any other office environment, although at certain establishments security may demand the presence of a prison officer.

Satisfying to know you're responsible for giving your trainees a basic skill and helping them, perhaps, to find a more useful way of life.

To apply, you should have a wide experience in the field of commercial computer programming. In COBOL or BASIC, a knowledge of FORTRAN would be an added advantage. Candidates should also have a knowledge of information systems. You should have received recognised training in the profession. Possession of a recognised qualification would be an added advantage.

Pay starts at £7,481 rising to £8,929 (including Environmental allowance), 5 day week, generous holidays.

For further information and an application form, please write to: The Home Office (R2/DH), FREEPOST, London SW1V 1Y2 (no stamp required). Applications are invited from men and women.

The closing date for applications is 12th December 1983.

**H.M. Prison Service**

A Service for Society

# Data Processing Manager

North of London

Salary c.£20,000 + Benefits

NEW APPOINTMENT

Our client, one of the world's premier publishing companies, is committed to acquiring substantial in-house mainframe facilities to service existing business lines and support a major new product launch in the area of electronic data dissemination.

This is a true 'green-field' situation, reporting to the Managing Director, and will involve the successful applicant in evaluating a variety of options and building up internal staff resources as appropriate. Major areas of activity include instituting sophisticated data capture techniques, managing software development programmes and implementing electronic text dissemination facilities. Extensive liaison with external customers and software houses is indicated.

The requirement is for a self-motivated and technically orientated data processing professional with comprehensive experience of managing hardware operations and proven systems project management skills, preferably where external resources are employed. An in-depth knowledge of data communications in a global context is essential and specific experience of Videotex applications would be a strong additional recommendation. Age indicator is in the 30's and a formal qualification is preferred.

To apply please send a CV or write or telephone for an application form to JOHN KITCHEN, at the address below, quoting Ref. GW1173.

BIS Applied Systems Limited  
York House, 199 Westminster Bridge Road  
London SE1 7UT  
Telephone 01-633 0866

**BIS** Applied  
Systems

## Ambitious market development programme TOP-PERFORMING SENIOR SALES PROFESSIONALS: SHARE IN OUR SUCCESS

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We're a major force in the office automation market-place, with a substantial established client base throughout the UK and a fast-developing product range encompassing everything from multi-function stand-alone to comprehensive shared-resource networks. Our current major expansion, coinciding with the introduction of a new generation of products, means there's never been a better time to join us.

As part of our progressive market development programme we are reorganising our field sales operation - and the creation of these exciting new opportunities is a key element of this strategy. We'll be reinforcing our existing horizontal sales organisation with an entirely new sales team who will be involved in selling our full product range (WP, shared-resource and office automation systems) to major/national account customers and to vertical markets (especially finance, government and specific industrial sectors).

To spearhead this initiative, we're looking for experienced senior sales professionals with proven business development capability - men and women who, above all, have the potential to grow within a recognised career structure leading to

branch or regional management or beyond. These rewarding opportunities will appeal to ambitious sales professionals who can back at least 5 years' successful selling in the computer/office automation industry with a mastery of the 'conceptual' sell and an ability to negotiate effectively at board level.

The highly achievable target earnings figure of £23,000 will consist of competitive five-figure base salary plus commission. Top performers, however, can expect to exceed this considerably, thanks to the no-selling package structure. And the more impressive your track record to date, the greater can be your expectations within this very generous system of remuneration. Free health insurance, life insurance, pension scheme and, if appropriate, assistance with relocation are all included among the large company benefits.

If you feel you meet our requirements and would like to join a company whose business has increased by over 80% in the last 5 years, phone Chris Duran (National Sales Manager) on Reading (0734) 888448 during office hours. Alternatively, write to him enclosing a detailed cv at Wordplex Limited, Excel House, 4th De Montfort Road, Reading, Berkshire RG1 6LP.

**WORDPLEX**

(6738)

## SYSTEMS MANAGER

Location: Lichfield, Staffs

Five figure salary  
+ company benefits

J H Sankey & Son Ltd., one of the country's largest builders' and plumbers' merchants with a national network of trade outlets, is seeking a highly motivated and experienced systems manager to head-up a systems team with the prime task of developing effective in-company procedures and applications.

The successful candidate must demonstrate a proven record in the management and implementation of projects evaluated and approved through cost benefit studies to establish their feasibility and practicality.

A capacity for planning, directing and co-ordinating systems through the motivation of staff and effective communications with management is an essential feature of the appointment.

The submission and subsequent implementation of approved proposals for the introduction of new manual and data processing systems together with ongoing reviews and recommendations on company D.P. equipment will also form part of the overall position responsibilities.

The position carries with it an attractive salary package including a first class pension scheme and private medical insurance.

Applications which will be dealt with in strictest confidence should be addressed to:

Ted Smith, Personnel Manager,  
J. H. Sankey & Son Ltd., Station House,  
Harrow Road, Wembley, Middlesex

(6648)

**SANKEY**

LONDON SCHOOL OF ECONOMICS  
COMPUTER SERVICE

### RSTS SUPPORT PROGRAMMER

The school has several PDP 11 computers which are used for a variety of wordprocessing and administrative tasks in areas such as student records, information retrieval and timetabling.

Applications are invited from experienced programmers to assist with support and maintenance of RSTS, including systems organisation and optimisation, installation and upgrades of word-11 and Cypid packages and related software troubleshooting, development of applications programs using Basic plus, Cobol and Cypid.

File transfers between the RSTS machines and a variety of other computers, from mainframe to miniframes.

Applicants should have a degree in a computer-based discipline and preferably two years' relevant experience. Salary according to age and experience will be in the range £7,000-£11,000.

Application forms returnable by 8 December 1983 may be obtained from the Personnel Department, LSE, Houghton Street, London EC2A 2AE. Telephone 01-404 4700. (6779)

### THE BRITISH PRINTING INDUSTRIES FEDERATION ANALYST/PROGRAMMER

to continue the development of a management information package for printers. The package is being written for micro computers and is centred around costing and estimating.

The work will also involve installation of the package in member firms and provision of additional software to meet individual requirements.

The job will be an interesting challenge to a self-motivated person who, preferably, has knowledge of accounting or costing requirements, is skilled in the use of M.BASIC and COBOL and is familiar with the CP/M operating system. Preferred age range: 30-40.

and

### PROGRAMMER

to work with the analyst/programmer on the development of the package. Experience of M.BASIC and the CP/M operating system required.

The job will enable a young programmer to gain experience not only in programming but also in the management information needs of a wide range of companies. Preferred age range: 20-30.

Attractive salaries, according to experience, and a good pension and life insurance scheme are available.

Apply to: Director General, BPIF, 11 Bedford Row, London WC1R 4DX. (6648)

### MOSCOM LIMITED SALES SUPPORT ENGINEER

Moscom are a manufacturer of telecommunications equipment distributed worldwide. We require someone with a minimum of three years' experience as technical support for the sale of telecom equipment.

Experience should include a knowledge of the telecommunications industry and microprocessor based equipment. Duties to include on-site demonstrations, data collection, installations, preparation of technical quotations, performance specifications and design audit tests. This position would appeal to a self-motivated individual who wants to advance with a new dynamic company, and who enjoys travel throughout Western Europe.

Salary commensurate with experience. Please submit c.v. in strictest confidence to:

Mr J. Constant, Director Technical Support, Moscom Limited, Weston Park House, New Newton Road, Newton (nr Hounslow), Middlesex

(6428)

### ANALYST PROGRAMMER

Circa £10,500  
NORTHAMPTON

Cosworth Engineering Ltd, world-famous designers and manufacturers of high-performance engines and components, are looking for an Analyst Programmer to join the management services team and to act as Deputy to Management Services Manager.

The position involves the development and implementation of a wide range of systems required by a progressive engineering company with a heavy involvement in the system management role on the HP3000.

Applicants should have a minimum of two years' COBOL and preferably one year's systems analysis in a manufacturing environment.

An attractive remuneration package is offered including non-contributory pension, four years' life cover and five weeks' holiday. Assistance with relocation will be offered where necessary.

If you think you meet our requirements, either send a c.v. or telephone:

MR. W. PRATT (PERSONNEL MANAGER)

06041 52444  
COSWORTH ENGINEERING LIMITED  
ST. JAMES MILL ROAD  
NORTHAMPTON NN6 5JJ

(6771)

### COBOL PROGRAMMERS

Two years' experience preferably on  
IBM Hardware

to £12,000 inc.

+ Five weeks' holidays

+ Free Lunch

+ Discount Holidays

+ Medical Insurance

+ Annual Salary Review

Keystone Computer Agency

01-404 4746

Gallup, one of the country's leading market research agencies, is expanding its Data Processing Department. The last few years have seen considerable developments in the services offered by the department using the company's IBM 4331 computer. Following our recent growth and our plans for further expansion this is an ideal opportunity to join a highly motivated and professional department.

### PROGRAMMER

We are looking for a programmer with at least 2 years' IBM experience using FORTRAN or COBOL to work on a variety of established and new applications.

### SPEC WRITER

The applicant should have a minimum of 2 years' experience in using a Market Research survey analysis package.

The salary for both posts will be negotiable according to age and experience. Write in confidence, enclosing detailed c.v. to:

**GALLUP**

Graham S. Dossart  
Gallup  
202 Finchley Road  
London NW3 6BL

## Analyst/ Programmers

Scientific Background

Sussex

DEC/RX/11M

VG Scientific is a world leader in multi technique surface analysis. We manufacture a complete range of instruments and accessories for the scientific examination of surfaces, and we are innovators in high technology molecular beam epitaxy for semiconductor production.

Our continued expansion means we require two Analyst Programmers with a scientific background, to join our Systems Development Department. Working on program design and development your experience in using RX/11M MACRO II is essential. Familiarity with PASCAL would be an asset.

We offer a competitive salary - very negotiable for the right person. Company benefits are excellent and include: sickness and pension scheme, free life assurance, five weeks holiday (increasing), and re location expenses will be met where necessary.

**VG SCIENTIFIC**  
The surface science company

Contact Mrs. Wiseman now on:  
(0342) 25011

Alternatively write immediately enclosing full C.V. to: VG Scientific Ltd.

The Birches Industrial Estate, Imberhorne Lane, East Grinstead, Sussex, RH19 1UB.

## U.K. Data Processing Manager

c £12,000

IBM SYS 36

New Installation

Development

Relocation

Ground Floor opportunity

Rural West Midlands

We are a successful American owned company in the manufacture and hire of materials for the construction sector. Continued growth and a company re-organisation have led us to appraise our Data Processing strategy and consequently we are installing an IBM SYS 36 in the new year and will be respecifying and redeveloping our DP and MIS facilities. We are therefore looking to appoint a self motivated, hands on individual who must demonstrate sound Business Analysis experience preferably with a good working knowledge of order entry, invoicing, ledgers, accounts and inventory systems. A programming background is essential (ideally RPG II) together with the ability to cope with heavy user liaison where personality will be the main asset required to build a new department.

Situated in a rural Midlands environment this post offers stability and genuine opportunity. Relocation expenses will be offered where applicable and the basic salary and benefits package will be generous. For further information please contact your local TCR office.

**TCR**

**Targa Computer Recruitment**

6 Liverpool Street London EC2M 7NH  
Monaco House Bristol Street Birmingham B5 7AS

Telephone: 01-283 9941 Telex: 25851  
Telephone: 021-622 2045 Telex: 334237

(6682)

## Writing is exciting with us!

Swindon

c. £11,000

Are you an experienced Software Engineer?

Could you explain and communicate software concepts to hardware engineers? Would you enjoy writing and implementing software for use in the testing of our advanced, microprocessor-based communications products?

We are Logica VTS, part of a leading European computing and communications company, dedicated to bringing the reputation for quality associated with the Logica name to the design, manufacture and marketing of text processing systems, both for major OEM customers and end user markets.

We now have a vacancy for an enthusiastic Software Engineer to specify, write, implement and evaluate self-diagnostic software for use in the testing of our products. You will liaise with our research and development staff, to produce quality software to our very exacting standards.

If you have a relevant degree or HND with a minimum of 2 years' experience of microprocessor/high level programming, and are familiar with digital hardware and UNIX/CPM operating systems, we would like to hear from you.

Please contact, quoting ref: VTS/87, Pauline Mobey, Personnel Officer, on Swindon (0783) 36291 or write for an application form to Logica VTS Limited, Drakes Way, Swindon, SN3 3JL.

**logica VTS**

(6705)

### VAX 11/780 COMPUTER OPERATOR

to work in our Data Processing Department.

The successful applicant will be required to work shifts and should be educated to O level standard with a minimum of one year's operating experience.

A good basic salary, plus shift allowance and LVs are payable together with four weeks' holiday and non-contributory pension scheme.

Please forward c.v. or telephone the Personnel Department for an application form.

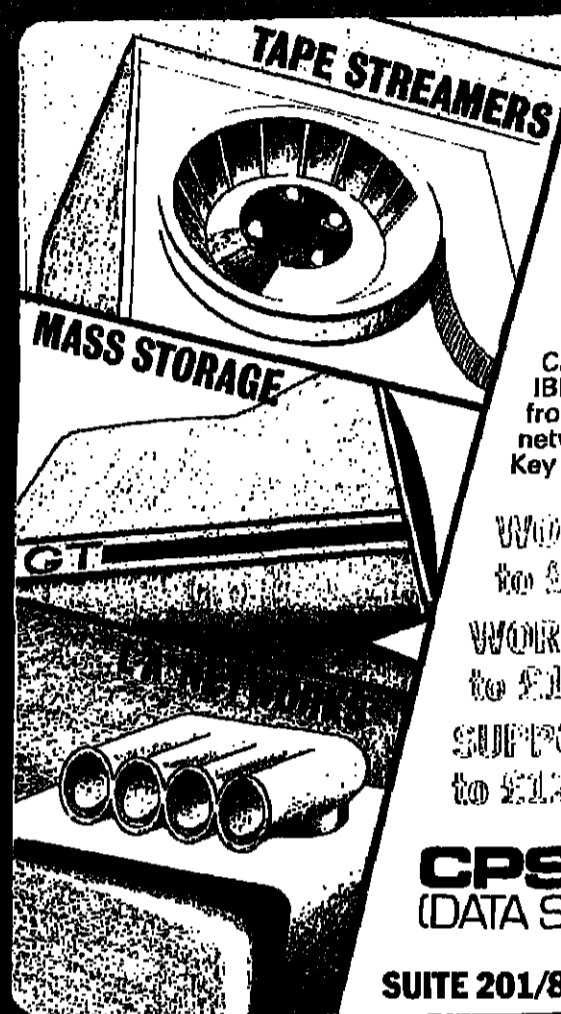
**SCHLUMBERGER**  
1 KINGSWAY  
LONDON WC2B 6XH  
Tel: 01-379 6191

**Schlumberger**

(6427)

# MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611



CPS (Data Systems) Ltd., are a fast growing distributor of IBM enhancement products. Offering a product range from add-on mass storage devices through to local area networks, sales will grow towards £10 million in 1984. Key members are required to complement a small team

WORKSHOP MANAGER  
to £12K + car

WORKSHOP TECHNICIAN  
to £10K (possible car)

SUPPORT ENGINEERS  
to £12K + car

**CPS**  
(DATA SYSTEMS) LTD

SUITE 201/8 Albany House 324 Regent Street London W1R 5AA 01-637 9611

that work for each other. Such individuals will have a genuine interest in their job and their role within the company. In return you will receive the satisfaction of total involvement in both the company's and your own personal development. A full relocation package is available.

A key individual, the successful candidate must possess a strong technical background obtained in a micro environment. As important is the maturity and personality to administrate the function in addition to training and supervising technicians.

Two-three years' electronics experience including involvement with micros and peripherals and an interest in software is desirable. Component level ability and an HNC or equivalent qualification is advantageous.

Systems Engineers with competency in both hardware and systems software are required to support dealers and distributors in both the UK and Europe. Exposure to both mainframe and micro environments is advantageous as is experience of MS DOS. An element of foreign travel is expected.

For an informal discussion ring Chris Bond or Kirk Blackmore on 01-637 9611

**MANAGEMENT & EXECUTIVE SELECTION**

## Operations Manager

c £11,250 Dual HP 3000 Birmingham

**"An exciting opportunity to participate in the development of computer facilities and future strategy in a Management role"**

As an important member of a large International Group, we are fully committed to the widespread use of computer technology. Our dual HP 3000 installation, together with a combination of other mini and microcomputers, provides a sophisticated computing facility catering for traditional commercial and manufacturing applications. Our objective in the short term is to extend our resources to provide an efficient computer controlled plant.

To help us realise this important objective, we now wish to recruit an Operations Manager. The successful candidate will possess in-depth operations experience from the interactive mini area - ideally, but not essentially, HP 3000 based. The role of Operations Manager will encompass the supervision and direction not only of the day to day operations function, but also with the forward planning of hardware and software development including local area networking and communications.

The position is ideally suited to an individual who is prepared to become totally involved in all aspects of a busy and developing computer installation. The ability to communicate effectively with Management, Users and Colleagues is considered as important as technical ability.

A first class salary package will be available, enhanced by relocation facilities, pension scheme and 25 days' annual leave.

In the first instance, please contact **Jim Mitchell** on 021 236 3781 (24 hour answering service) or on 021 455 7653 (evenings and weekends until 9.00 p.m.).

Technical, Sales & Management Appointments

**Specialist Computer Recruitment Ltd**

**SOUTH**  
James House, 46 James Street  
London W1M 5HS  
01-935 0871/488 0481

**MIDLANDS & INTERNATIONAL**  
35-37 Great Charles Street  
Queensway, Birmingham B3 3YK  
021-236 3781

**NORTH**  
International House, 84 Deansgate  
Manchester M3 2ER  
061-533 0482

**BELOW**  
Avenue Louise 327  
Box 4, 1050 Brussels  
019 322-648 7161/71

**HOLLAND**  
Willemsparkweg 92  
1071 H.M. Amsterdam  
016 2128-78947

## Telecommunications/ Data Specialists

**Are you ready to make a major career move?**

**CROYDON** up to £11,800  
Join our Network Control Group and get involved with our rapidly expanding on-line Network. This is one of the largest of its kind in the UK.

The Data Network consists of approximately 1400 terminals attached to an IBM 3081 and an Amdahl 580/60. A further 40% growth is expected over the next few years including significant moves towards Distributed Processing.

You can offer us experience in:

- Evaluating and selecting new equipment
- Installation and planning
- Operational fault diagnosis and repair
- Interactive and distributed processing
- Equipment commissioning
- Mainframe data communications.

We can offer you the opportunity to contribute to our continued expansion.

You will preferably have reached HNC standard of education and will have the initiative to play a significant role in the work of the group.

A car allowance will be paid for travel throughout the South Eastern Region. Benefits include relocation assistance where appropriate, excellent working conditions, generous holidays, sports and social facilities (including squash and tennis).

Please write with full career details, quoting reference no. CR139, to: Personnel Manager, South Eastern Gas, Segas House East, Katharine Street, Croydon CR9 1JU.

**SOUTH EASTERN GAS**

## A top level role for an IBM SOFTWARE SPECIALIST with an ATM networks background £ NEG Scotland

NCR, one of the world's leading Auto Teller Machine manufacturers is seeking a highly intelligent and articulate software specialist to fill a senior post at its East of Scotland design and development operation.

Acting in a consultative role, your main responsibilities will be to provide applications support to marketing and development groups and to liaise with customers in the banking community throughout the world at the highest level.

The successful candidate will have a minimum of four years experience gained in an IBM environment which will have provided an in depth knowledge of CICS. Recent involvement in the design or installation of a network of ATMs or other types of banking terminals would be ideal.

The salary package on offer will more than meet the expectations of the highest calibre of individual and the benefits are those one would expect of an International Company, including ample relocation assistance.

Please write with full personal and career details to **Ian Hume, Manager - Employee Relations, NCR (Manufacturing) Ltd., Kingsway West, Dundee DD2 3XX.**

**NCR**



**Manager**  
Computer Division  
Preston  
c£15,000 (Negotiable)

Community Task Force, a national company with charitable status, has developed rapidly through successive Government programmes to provide work and training for the unemployed and school leavers. Currently, CTF is engaged in the Youth Training Scheme and the Community Programme on a substantial and national scale.

The Company operates an IBM System 38/4 with remote System 34's for employee administration and provision of management, statistical and financial information. This equipment has recently been installed. Our present Manager is coming to the close of his secondment period and a permanent successor is being sought. Reporting directly to the Chief Executive, the successful applicant will be responsible for the development of new and improved information systems plus co-ordination with other Divisions in research and development of computers as training aids. In addition to computer activities, the Manager is a member of the senior management team.

Applicants must have had practical experience of managing a vigorous DP Department. Drive and imagination, together with the ability to motivate staff and meet strict development timetables are prerequisites for the post.

Applications in writing to: **R.L. Thomas Esq., Professional and Executive Recruitment, 8th Floor, Victoria House, Ormakirk Road, Preston PR1 2DX.** Applications invited from either sex.

**PER** Executive Selection

## CICS Specialists

**London** c. £3000/month

We require two experienced CICS Systems Programmers to undertake open ended assignments for separate clients, with initial commitments of between 3 and 6 months. In one case the role will be to carry out CICS performance monitoring/tuning in a multi-cpu installation running MVS/SP 1.3, CICS 1.6 and DL/I, including liaison with on-site MVS and VTAM specialists. The other client has recently installed MVS with CICS and DL/I and needs support in tailoring the CICS environment, installing a high-level development package and providing technical support to applications staff. Candidates for either assignment should have more than two years CICS experience, gained preferably in an MVS environment.

T064-065

## IMS Fast-Path Specialist

**UK** c. £3250/month

We are seeking an IMS DB/DC Design Consultant for a 12 month assignment in London. Applicants should have already played a key role in the design of several on-line IMS systems, and will ideally possess good knowledge about the design and performance constraints of the Fast-Path feature, together with some knowledge of communications protocols including PSS/X.25. The job role will be primarily to provide design advice to an application team developing a complex real-time system with IMS transaction rates which could approach 1000/second, although some involvement in other Fast-Path applications is likely.

J061

## PL1/Analyst/Programmers

**Home Counties** c. £2250/month

We are seeking Analyst/Programmers at several levels of seniority to work on a 6 monthly renewable contract basis at our Client's IBM 3033 + 4341 Data Centre. Software in use includes MVS, VM/CMS, TSO/SPF, CICS and IMS DB, and applicants should have good knowledge of at least 2 of these in addition to PL/I. Start dates for these assignments range from late November 1983 to Easter 1984.

J063

## MVS Systems Programmer

**Home Counties** c. £2350/month

We need an additional Systems Programmer to join our Client's system support team on a 6 monthly renewable contract basis. The current configuration consists of multiple 4341's running MVS/SP1.3, JES2, CICS, IMS DB, RACF and a variety of other Program Products. A major CPU upgrade is planned for early in 1984. Applicants should have as a minimum, a good basic grounding in MVS, together with knowledge of at least one of the other products above. The successful candidate will start the assignment in December or January.

J062

CDS is an Anglo-Swiss Consultancy specialising in systems programming and DB/DC application development. For further details of the above positions or for an informal discussion on future European or UK assignments please contact **Althea Shine** at our UK offices Tel. 0276 681261 (or through our answering service on 0276 681266 during evenings/weekends).

Telex 858062

CDS Limited, 19A Park Street, Camberley, Surrey GU15 3PQ.



**IBM Systems Programming  
and DB/DC Specialists**

## Data Processing at our Addlestone Computer Centre

Plessey Computer Centre is one of the largest commercial data processing installations in the UK running several large ICL and DEC Mainframes. In the current phase of new developments and expansion we have the following vacancies:

**Senior Systems Programmer** up to £12k

Here is an excellent opportunity for an experienced professional to work on a wide range of interesting projects. Applicants should have at least 3 years' systems programming experience, specifically including VAX, VMS operations and familiarity with MACRO, BLISS etc.

**Database Administrator** up to £12k

This is an ideal position for someone experienced in Computer Science or Business Studies. Candidates should have a good background in data processing, including supervising databases and specific experience of IDMS and VME operating systems.

In addition to the stated salaries, we offer excellent company benefits including pension scheme, BUPA, paid overtime, generous holidays, subsidised restaurant and active sport and social club.

Please telephone or write to **Peter Steiner, Recruitment Manager, Plessey Displays, Station Road, Addlestone, Weybridge, Surrey KT16 2PW. Tel: Weybridge (0932) 47282.**



**PLESSEY**  
electronic systems

(0895)

## CAREER OPPORTUNITIES IN MANAGEMENT SERVICES

HALIFAX (£7,500 - £11,000)

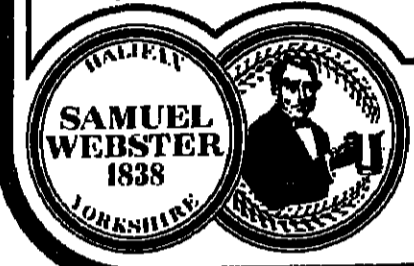
We are Samuel Webster and Sons Limited, part of the brewing division of a major international company. At our Fountain Head Brewery located two miles from Halifax into the Pennine countryside we employ over 500 people in the production, packaging, distribution and retailing of beers, wines and spirits throughout the Yorkshire region.

Due to promotion into Line Management we currently have two vacancies for Management Services Officers in our Department, which provides a professional, project-based service to all functions within the company. Projects range widely from the implementation of office automation (using some of the most advanced equipment available today) to the more traditional applications of analysis techniques in both the office and outside environments.

The persons appointed will be in their mid 20's to early 30's educated to degree level with formal training and several years experience in the area of business systems analysis. Some experience in the development and implementation of computer based systems is essential and programming knowledge would be an added advantage. A high degree of self-motivation, numeracy, tact and the ability to communicate effectively are also required.

We offer a competitive starting salary dependent on qualifications and experience, excellent career development opportunities, plus the other benefits normally associated with a major organisation. Relocation assistance will be given where appropriate.

If you feel your standards can match ours then please telephone or write for an application form to: J. E. Mahon, Manpower Resourcing Manager, Samuel Webster & Sons Ltd., Fountain Head Brewery, Ovenden Wood, HALIFAX HX2 0TL. Tel: 0422 57188



## Systems Programmer

Oil Industry Libya  
c. £25,000 p.a. (Tax Protected) Single Status  
c. £27,000 p.a. (Tax Protected) Married Status

Our client is engaged in a major programme of oil and gas development and exploration in close co-operation with the Libyan National Oil Corporation. They have retained us to recruit a Systems Programmer for their Technical Data Centre and Computer Department in Tripoli.

Candidates should be professionally qualified with at least ten years relevant experience together with knowledge of the IBM 370/148 system with 2MB memory and the DOS/VSE operating system.

The post carries either married or single status and benefits include free accommodation, BUPA cover, education assistance, a company savings scheme and generous leave with air fares paid.

Please write for an obligatory application form, quoting job reference number and giving brief details of your career history. Those without the qualifications and experience advertised need not apply, and irrelevant applications will not be answered.



JAWABY OIL SERVICE

UMM AL-JAWABY OIL SERVICE CO. LTD.,  
Recruitment Co-ordinator, Job Ref. XYR/1  
33, Cavendish Square, London W1M 6HF.

## GLC

Working for London

### Software Engineer Traffic Control Systems Development

The Council's Urban Traffic Control System is one of the largest in the world. This is an opportunity to support the development of the next generation system, consisting of a Local Area Network configuration.

In addition to the major task of specifying, developing and implementing system software, there will be supervisory responsibility for system operation together with the installation and commissioning of new equipment and software facilities. The provision of guidance and technical advice to users and management will be an important element of the work.

Applicants must be graduates or equivalent in control engineering, electronic engineering or similar discipline together with at least 2 years real time CORAL or ASSEMBLER programming background within a DBC PDPSRX IIM or VAX/VMS environment. This post is suitable for job sharing.

Salary: £12,336 - £13,872 inclusive.  
For an application form, to be returned by 10th December 1983, write to: Transportation & Development Department, Greater London Council, Room 454B, The County Hall, SE1 7PB or telephone 01-633 3476.

The GLC welcomes applications from all sections of the community, irrespective of an individual's sex, ethnic origin, colour or sexual orientation and from people with disabilities who have the necessary attributes to do the job.

The GLC is an equal opportunities employer

## COMPUTER OPPORTUNITIES - NORTH WEST

PROGRAMMER, £10,000+  
First working environment using engineering systems, move into the latest technology, knowledge of CAD, FORTRAN required.

PROGRAMMER, £9,000+  
Key position in company using development software on Intel 8086/8088 micro, using ASSEMBLER, PASCAL and PLM.

SOFTWARE ENGINEER, £14,000+  
Fast track to the top using high level control systems, work on varied and interesting projects with prospects to Team Leader, knowledge of FORTRAN and PASCAL required.

PROGRAMMER, £9,000+  
Assume responsibility in a challenging real-time environment using the latest software techniques and hardware systems, experience of PASCAL and MACRO 11 required.

SOFTWARE ENGINEER, £15,000+  
Excellent travel allowance, golden opportunity with prestigious software house, development real-time engineering systems in ASSEMBLER and PASCAL.

Our register of job opportunities is extensive. For an instant decision regarding your next career move, contact:

ATA COMPUTER RECRUITMENT  
90 Cross Street  
Manchester M2 6LA  
(Out of hours answering service)

ATA

## your appointments register

### Programmers

NCR/IBM/COBOL to £15K  
Insurance Banking London H. Counties N. Engl.

COBOL/PL1/OS/CICS/IMS to £13K  
Commercial H. Counties Midlands - Manchester

PASCAL UCS/DP to £10K  
Management information systems London

ICL/COBOL to £12K  
Two years' commercial experience Notts

IBM SERIES 1 to £10K  
Assembler N. London

RPG 2/3 to £12K  
Minimum one and a half years' experience London/N.E.

IBM, DOS, VSE, VMS, CICS, VSAM, DL1, IMS to £14K + CAR  
Systems experience Middx

BASIC to £15K  
Mini/Micro Computers London

IBM/UNIVAC/COBOL to £12K  
On-line/Database Surrey

IBM VS-FORTRAN/VSAM/ISPF to £11K  
MVS/TSO Sheffield

### Analyst/Progs

DEC PDP 11 RSTS/E BASIC + to £12K  
Multi-user Realtime comm. applications Middx

IBM 34/38/4341 to £15K  
London/Home Counties/Norfolk

ICL 1500/ME29/2903 to £12½K  
COBOL Essex/Herts

IMAGE PROCESSING C/UNIX to £12K  
Scientific Applications

### Hardware/Support

TECH. SUPPORT MANAGER to £16½K + CAR  
IBM DOS/VSE CICS IDMS Kent

SERVICE ENGINEERS to £10K  
S100 London

SUPPORT ENGINEER to £17K  
VAX 780/750 UK & Europe

APPLICATIONS ENGINEERS to £14K  
Assembler/Micros/Printer Interface LONDON

PROJECT ENGINEER to £11K  
Systems/DEC Beds/Manchepter

SOFTWARE SUPPORT to £NEG  
Medical/Training/Technical Berkshire

SOFTWARE ENGINEER to £15K  
IBM DOS, VSE, DL1

PROJECT LEADER to £16K  
Retail Management Background

ICL/PRE- AND POST-SALES to £16K  
SUPPORT Essex/Middlesex

SOFTWARE SECTION MANAGER to £16K  
Pascal/C/Microprocessor

### Systems Analysts

IBM 370/125 4341 to £11K  
Commercial on-line systems Essex

CAD/CAM to £16K  
Real time - Modelling Man/Essex/South West

IBM/BURROUGHS to £15K  
Commercial Accountancy London/Surrey/Manchepter

VAX/COBOL to £15K  
Banking applications London

IBM/ICL to £14K  
Commercial Applications London/Middlesex

IBM SYSTEM 34/38 MAAPICS to £13K  
Sussex

### Software Engineers

CORAL/PASCAL/MASCOT/C to £15K  
Communications Glos/H. Counties/Middlesex/Blackburn

ASSEMBLER/PLM to £12K  
Northern England

MILITARY SYSTEMS/RADAR to £14K  
Coral - Mascot Hants/Surrey/Essex/S. West

PDP/VAX/INTEL to £16K  
High Level Assemblers In Derby/Surrey/London/Norfolk

COMMS/TELECOMS/MOD to £14K  
Mini/Mainframe E. Anglia

HP3000/INTEL to £12K  
CAD/CAM/ATE Home Counties

HPA 900/RTE A1 to £15K  
Biotechnology Process Control London/Wiltshire

### Snr Appointments

PROJECT LEADER to £15K  
Military Systems Berks/Hants

SALES EXECUTIVES to £30K  
Mainframe Nationwide

CONSULTANT to £15K  
Military/Defence Berks

DATABASE ADMINISTRATOR to £16K  
IBM DOS, VSE, DL1 Sheffield

PROJECT LEADER to £15½K  
Retail Management Background Kent

ICL/PRE- AND POST-SALES to £16K  
SUPPORT Berks

SOFTWARE SECTION MANAGER to £16K  
Pascal/C/Microprocessor Essex/Middlesex

You can be sure of hearing about many opportunities like these, U.K. and abroad, when you make Sloangate your first choice. Take the next step in your career with us!

telephone 01 549 9236

**Sloangate**  
The Appointments Register

SLOANGATE LIMITED  
Bancroft House  
171-177 London Road  
Kingston-Upon-Thames  
Surrey KT2 6BA  
Telex 89047 STANL G

## “Rapid growth and a diversity of business operations are their distinguishing marks.”

The UK subsidiary of one of the world's largest banks operates across the whole spectrum of commercial and business finance. Addressing such diversified customer needs demands the most sophisticated yet flexible computer resources. Response to these needs is reflected in a programme that currently involves: KAPITI international banking system development, integrating the Bank within the SWIFT network and augmenting the present System 38 and 34 networked configuration with a second System 38.

### SENIOR SYSTEMS ANALYST

To £16,500 plus benefits West End HQ

This new position interfaces between users, O & M and the Computer Centre. The purpose is to evaluate and translate banking requirements through system design to implementation, testing and documentation, ensuring user acceptance. It requires a blend of commercial banking and formal systems experience, preferably using IBM GSD hardware and KAPITI, and will appeal to a free spirit seeking a green field opportunity and management promotion.

Both positions offer considerable scope for promotion and personal advancement within dynamic and friendly environments.

The additional benefits comprise subsidised mortgage, free banking facilities, free medical insurance, free season ticket loan plus easily accessible and modern office accommodation. To apply for either positions, please contact their Advising Consultant, Roger Dorricott on 01-935 0671 (24 hour answering service) or alternatively submit your Curriculum Vitae to him at the London office address below.

### Specialist Computer Recruitment Ltd

SOUTH  
James House, 48 St James Street,  
London W1M 6HG  
01-935 0671/488 0461

MIDLANDS & INTERNATIONAL  
35-37 Great Charles Street,  
Birmingham B3 3JY  
021-238 3781

NORTH  
International House, 84 Deansgate,  
Manchester M3 2ER  
061-833 0427

BRUSSELS  
Avenue Louise 327,  
Boite 4, 1050 Brussels  
010 322-640 7161/71

HOLLAND  
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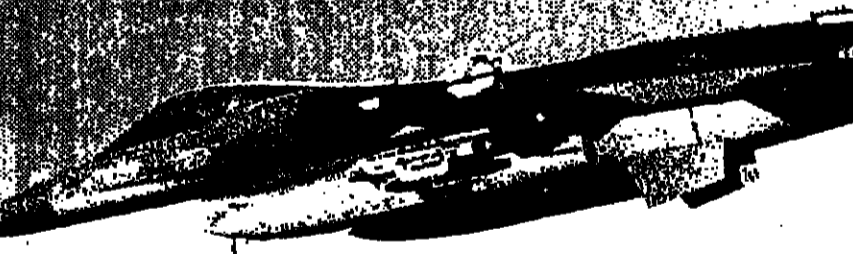
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The teleprocessing network consists of local 3274 controllers with 200 terminals attached and a 3705 remote controller with 100 terminals attached (Munich and Berlin) plus RJE and a link to EURONET.

The software used is CICS, IDMS, ADS/ONLINE, STAIRS, DCF/DLF and APL.

The EPO is seeking for its branch in the Hague:

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They will work in close liaison with other departments for the EDP projects in support of the administration of the Office. They also participate in the technical realisation of the EDP systems.

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### SENIOR PROGRAMMER

for administration projects. A complete secondary education and at least four years' experience with COBOL is required; experience with CICS and IDMS, ADS/ONLINE would be an asset. Furthermore a working knowledge of English and knowledge of French and/or German is required.

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Further information and application forms are available from: Mr A. P. Brabander, EUROPEAN PATENT OFFICE, DG1 Personnel Department, Patentlaan 2, 2288 EE RIJSWIJK, The Netherlands. Tel: (070) 90.67.89

The closing date for applications is 12th December, 1983

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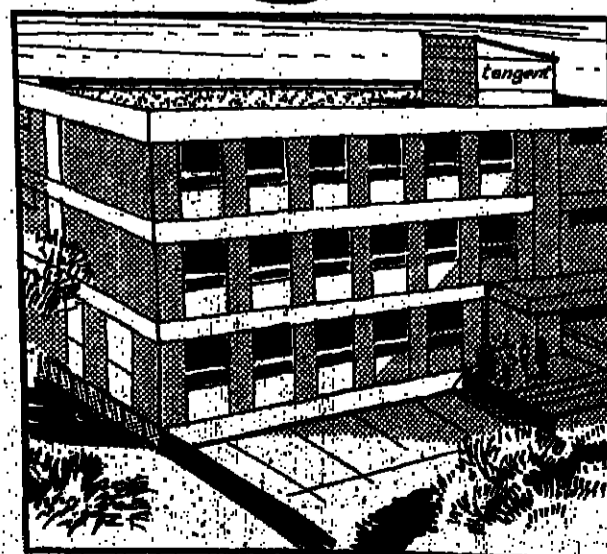
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11/Nov/83*

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South Wales Salary negotiable

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Salary will be negotiable, depending on age and experience, and relocation expenses are available, where appropriate.

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PO1 (1-5) (£9,948-£11,052)

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The Council's computer is an ICL 2966 running under DME with approximately 60 terminals. Plans have been made to replace the current machine in 1984 with an ICL 2956 running under CAIE.

Application forms and job description are obtainable from the Personnel and Management Services Office, Town Hall, Warrington. (Tel: Warrington 39961 Ext 32) to whom completed forms should be returned by Monday, 13th December, 1983.

(9671)

### ilea Inner London Education Authority

### Director of ILECC

Inner London Educational Computing Centre  
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This is a re-advertisement

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Post Ref. T251

Grade Sc5/8

Salary £7,191-£8,712

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Closing date for applications will be 12th December, 1983. South Yorkshire County Council is an Equal Opportunities Employer.

South Yorkshire  
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### Analyst/Programmer

£7,788-£11,136 pa Inc London, N11

A challenging opportunity within the User Applications team in Middlesex Polytechnic's Academic Computing Service.

Staff and students use an increasing variety of applications packages by means of a network based on DEC System-10 and Prime 550 systems and large numbers of microcomputers.

Responsibilities involve the implementation and maintenance of software in these applications areas: Statistical and Survey Analysis; Simulation and Modelling; CAI/CAL and Information Systems.

A degree in a numerate discipline is expected, together with at least three years' computing experience, including use of modern operating systems, system design, Fortran and at least one other high-level language, documentation writing and user liaison.

Write quoting ref N132A for further information and an application form, posting first-class to: Personnel Office, Middlesex Polytechnic, 114 Chase Side, London N14 6PN. Closing date December 5.

Middlesex Polytechnic

### ESSEX WATER COMPANY COMPUTER SHIFT SUPERVISOR

£8,800-£10,400

Our computer installation currently has two ICL 2956 computers which run under DME/2 environment. A large IT network is supported together with an advanced IDMS database application. Development plans include other IDMS applications for use within the water industry and conversion to VME/2800 environment.

For this position at least three years' operations experience is required with a detailed knowledge of experience of the following:

- DME/2, VME/8 or VME 2800 Operations Environment
- Supervision of Staff
- Controlling the running of shifts
- User Liaison and Control
- JCL and/or SCL
- Communication Networks

The above salary range includes 12% Shift Pay, based on a two-shift system, five-day working week.

Please write to: Mr H. O. O'Neill, Computer Operations Controller for an application form or telephone him on extension 324 or 321.

ESSEX WATER COMPANY  
342 SOUTH STREET ROMFORD  
ESSEX RM1 2AL

TEL ROMFORD 48076

# PUBLIC SECTOR

### LONDON BOROUGH OF HAVERING Housing Department HOUSING PROGRAMMER

Grade APTC Scale 3/4  
Salary £6,237-£7,602 inclusive

This is a key post in a progressive Housing Department with a considerable commitment to the use of High Technology in the Housing Service.

The Department has a network of computer equipment based on a central DEC PDP 11/44 programmed in Basic + and peripheral Olivetti TC 800s programmed in Assembler. Most aspects of Housing Management for the Council's 17,500 dwellings are computerised and the successful candidate will be expected to deal with the maintenance of existing software and new software developments in housing and associated fields.

Ideally the successful candidate will have some experience of Basic + running on a DEC Series 11 mini under RSTS/E, together with an appreciation of the DEC and Olivetti hardware and on-line real time communications. Candidates should be able to work under pressure and have had some experience in business systems, database systems and/or property management systems. Suitable training will be given if necessary.

Application forms and job description available from the Housing Manager, Mercury House, Romford RM1 3DT. Tel: Romford 68998, ext. 428.

Closing date: December 9, 1983.

(9710)

### Inner London Education Authority ILECC - Inner London Educational Computing Centre John Ruskin Street, London SE5 0PQ PROGRAMMER/ANALYSTS

(Prof. B/C):-  
Salary range - £7,338-£12,558 plus £1,284 L.W.A.

Vacancies exist for programmer/analysts to (i) work on software development for the support of educational use in schools and colleges and (ii) for work on developing CAL packages in a wide variety of disciplines for use on RML 360Z, 480Z microcomputers and (iii) for work on developing applications packages for two PRIME 860s. The programmer/analyst recruited should be people with a variety of language and software experience. Teaching experience is not essential.

Application forms and further details are available from:- The Education Officer, EO/Estab 1B, Room 365, The County Hall, London SE1 7PB. (Please enclose a stamped addressed envelope.) The closing date for the return of completed application forms is 9th December 1983.

ILEA is an equal opportunities employer

(9670)

### TEESSIDE POLYTECHNIC COMPUTER CENTRE PROJECT MANAGER

Post Reference No. P.C.U.08  
Grade: PO16a, Salary: £10,558-£17,703 per annum.

To lead a team of programmer/analysts in the design and production of software for the Administrative work of the Polytechnic. This software is being written using a powerful and sophisticated management information system on a Prime 760 computer.

The post offers an excellent opportunity for a systems analyst or experienced programmer to further their career by moving into a management position in one of the leading Computer Centres in the educational field.

Application forms and further particulars from: The Personnel Section, Teesside Polytechnic, Borough Road, Middlesbrough, Cleveland TS1 3BA. Telephone: Middlesbrough (0642) 218121, Extension 4114.

Closing date for applications: 9th December, 1983.

(9694)

### FRENCHAY HEALTH AUTHORITY SOFTWARE ENGINEER FRENCHAY HOSPITAL

Salary scale: Up to £9,000 p.a. dependent on experience and qualifications.

Computer Scientist required to join the computing section of the Department of Medical Physics at Frenchay Hospital.

Medical Physics is a multi-disciplinary department and the computing section is responsible for all aspects of any computer work undertaken within the Authority. Work is carried out on a considerable number of PDP 11s and micros. The computing section works on a very broad spectrum of applications, and this post will primarily be involved with patient administration systems written in MUMPS.

Applicants should have a very sound grounding in software and an appreciation of hardware. Knowledge of DEC hardware and software, particularly MUMPS, would be an advantage.

Application form and job description available from the Personnel Department, Frenchay Hospital, Bristol BS16 1LE. Tel (0272) 66686 ext 578.

Closing date 5 December, 1983.

(9710)

### EDUCATION DEPARTMENT MONKWEARMOUTH COLLEGE OF FURTHER EDUCATION DEPARTMENT OF SCIENCE AND TECHNOLOGY SENIOR LECTURER/COLLEGE CO-ORDINATOR FOR COMPUTING

£10,683 - £12,552

Applicants should have appropriate qualifications and experience. The successful candidate will be expected to lead the Computer Section, and to co-ordinate the provision of computing throughout the College.

Duties to commence: 1st May, 1984.  
Application forms and further details available upon receipt of a stamped, addressed envelope from the Principal, Monkwearmouth College of Further Education, Swan Street, Sunderland, SR5 1EB. Closing date for applications: Two weeks after the appearance of this advertisement.



borough of  
sunderland

(9720)

### Essex County Council CHELMER INSTITUTE OF HIGHER EDUCATION School of Computing

### SENIOR LECTURER IN COMPUTER STUDIES

A suitably qualified person is required as soon as possible to teach at Higher National Diploma level.

The Institute was recently selected by the Government as a centre for expansion of Computer Studies courses.

Applicants will preferably have had commercial data processing experience and should have specialist knowledge in one or more of the following areas:

- Business applications of computers; information systems analysis; design and management; current systems analysis and design methodologies; database system design and implementation.

Salary: Senior Lecturer £10,683-£13,443 (bar at £12,552) per annum.

Application forms and further details from Principal Administrative Officer, Chelmer Institute of Higher Education, Victoria Road South, Chelmsford CM1 1LL. Telephone Chelmsford 354481, Ext. 247. Closing date: December 8, 1983.

(9710)

### THE UNIVERSITY OF SHEFFIELD COMPUTING SERVICES Programmer in the Microprocessor and Microcomputer Laboratory

Applications are invited from men and women for the above post (vacant for a fixed term of three years from a date as soon as possible). The post involves the development of software and the analysis of software problems. However, the solution of associated hardware problems is also an important aspect of the work, for example problems involving the interconnection of microcomputers and mainframes. A relevant degree and considerable experience with microcomputers is preferred. Programming experience should include both high and machine-level languages. Initial salary in the range £5,310-£7,330 a year on Grade 16 for Other Related Staff, rising to £8,330 a year. Particulars from the Registrar and Secretary (Computing), The University, Sheffield S10 2TN to whom applications is invited including the names of three referees should be sent by 15th December, 1983. Quota Ref: R11/83.

### Hereford and Worcester County Council REDDITCH COLLEGE Department of Technology Computer Unit

### LECTURER

### GRADE 2 - COMPUTING

Required from 1st January, 1984, a Lecturer in Computing, Data Processing, Programming and Computer Studies on courses leading to BEC and Higher BEC and Professional Qualifications, BEC/TEC Diploma in Computer Studies, TEC and Higher TEC and other computer courses. Applicants must possess a degree or equivalent professional qualification preferably with recent commercial and/or teaching experience. Commanding salary within L1 range £7,215-£11,568 dependent upon age, qualifications and experience.

Further details of this post, together with application form, may be obtained from: The Principal, Redditch College, Peckham Street, Redditch B96 8BW. Telephone: Redditch 63607.

(9720)

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### Analyst/Programmer

East Anglia

to £9,500

A prestigious company is seeking an additional analyst/programmer for manufacturing, marketing and distribution development projects based on IBM and HP3000 equipment. Excellent opportunities and conditions. Ref: 24/1 Barry Turton

### ICL COBOL

Avon

to £9,000

Our client is seeking an ICL COBOL programmer for development of on-line commercial systems. Experience should ideally include VME and DME. Good relocation package. Ref: 24/2 Alison Jary

### Analysts and Programmers

North Midlands

to £12,000

Due to continued expansion this computer services company has opportunities for analysts with manufacturing systems experience, and programmers with good IBM COBOL. Excellent salaries and relocation if appropriate. Ref: 24/3 Barry Turton

### IBM Programmers

South West

c£9,000

Opportunity exists with well-established company for IBM programmers with a minimum of 12 months COBOL and/or PL1, preferably with on-line experience, for maintenance and development of commercial systems. CICS and DL/I would be an advantage. Ref: 24/4 Alison Jary

### IBM COBOL Programmers

Cheshire

to £10,500

This well-known organisation is seeking additional IBM COBOL programmers. You should have at least two years' relevant experience and be educated to 'A' levels or above. Ref: 24/5 Barry Turton



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(9723)

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### IBM

MANTIS, EASYTRIEVE  
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RAMIS & other Database  
COBOL, CICS, IDMS

Analyst/Programmers  
Analyst/Programmer  
Analyst/Programmers  
Analyst/Programmers  
Analyst

### ICL

COBOL, TPMS/IDMS  
VME/8, IDMS  
DRX, CICS-COBOL  
SYSTEM 25, ASSEMBLER

Various  
Programmers  
Programmers  
Programmers

### OTHERS

HONEYWELL DPS 8, COBOL, DM1V, TP  
CORAL 68  
PRIMOS, COBOL  
HONEYWELL L8, COBOL & S/WRITE  
VAX 11/780 or 830, VMS/MACRO 32  
INTEL 8080, ASSEMBLER  
PERKIN ELMER, COBOL

Analyst  
Analyst/Programmers  
Analyst/Programmers  
Analyst/Programmers  
Programmers  
Programmers  
Various

Contact Jackie or Lesley

**MARCOL** 01-402  
Computer Systems 9355  
49 Queen's Gardens, London W.2

**PRODUCT DEVELOPMENT MANAGER LONDON c.£18,500**  
The overall responsibilities for this position will include management of a technical group involved in detailed design, development and testing of a new product based upon an outline specification. Ideally, the applicant will have experience of MICRO COMPUTERS, and knowledge of ASSEMBLER, FORTRAN and PASCAL and be able to provide technical backup to the staff. Excellent company benefits apply. Ref: C1262

**TECHNICAL SUPPORT MANAGER SURREY £17,000++ Benefits**  
Large financial organisation needs a Technical Support Manager to take charge of a small team of Systems Programmers and Network Controllers. The successful applicant should have good management/supervisor skills, together with DOS/VSE VM in a networking environment. This CICS, SHADOW, etc. Knowledge of MINIS, eg. WANG would be a distinct advantage. This position would ideally suit a Senior Systems Programmer wishing to further his/her career opportunities. Ref: C1265

**ANALYST CONTROLLER LONDON £16,500+ Car**  
Our client, a major manufacturing organisation requires an experienced Analyst with IBM expertise to direct and co-ordinate the design and implementation of commercial applications. Ref: B1088

**SENIOR ANALYST to £16,500+Relocation**  
Our clients require someone with a minimum of 4 years' analysis/design experience gained within an IBM/MVS, CICS/IDMS environment. The successful applicant will be required to take control of the development of large scale projects using the latest online and database techniques. An excellent career path and company benefits apply. Ref: A1245

**TECHNICAL SERVICES MANAGER MIDDX c.£15,000+ Car**  
Our client, a leading manufacturing group is seeking someone with in-depth knowledge of MVS, CICS, and VTAM together with the ability to plan, control and co-ordinate technical staff. Occasional overseas travel. Ref: B1258

**PROJECT MANAGER BERKS £15,000+Relocation**  
Our client, a large manufacturing company is looking for someone to take charge of a small team of Analysts and Analyst/Programmers, and to run projects from feasibility through to implementation in an IBM DOS/VSE environment. The successful applicant will have 4 years' DP experience and be currently holding a supervisory position. Usual large company benefits apply. Ref: D781

**PROGRAMMERS & ANALYSTS MIDDX to £15,000+**  
This major IBM User needs a development staff to work on a wide variety of commercial applications and software packages in an MVS, IMS VTAM environment. A working knowledge of PL1 or COBOL and/or ASSEMBLER is essential for these positions. Excellent career opportunities and benefits package apply to this large diverse organisation. Ref: C1235

**SOFTWARE ENGINEER HERTS to £15,000+**  
Major organisation requires a Software Engineer with 2-3 years' FORTRAN experience in a DEC/VAX, VMS environment, to work on a wide variety of real-time systems. A knowledge of UNIX would be useful. Excellent prospects and large company benefits apply. Ref: C1187

**PROJECT LEADER LONDON c.£15,000+**  
Large international financial organisation needs someone to take a leading role in the development of major online commercial systems in an IBM DOS/VSE, CICS environment. A vacancy also exists for a PROGRAMMER/ANALYST with a minimum of 4 years' experience using IBM COBOL in a CICS environment, where a salary of c.£12,500 is offered. Excellent prospects and benefits apply including PROFIT SHARE. Ref: C1234

**RPG2/3 PROGRAMMERS & ANALYST PROGRAMMERS to £14,000+Benefits**  
A large number of our System/34-38 clients, based in London, Home/Southern Counties need Programmers and Analyst/Programmers with 1-2 years' RPG2 or RPG3 experience. Application areas include Banking, Insurance, and other commercial systems. Benefits include subsidised MORTGAGE, BUPA, Life Assurance, NC Pensions, etc. Ref: C1228

**SYSTEMS ANALYSTS MIDDX £14,000+**  
Major Software House needs 2 Systems Analysts to work on real-time Banking/Financial applications. A working knowledge of FORTRAN is essential for these positions. DEC/VAX experience is preferred. Excellent prospects and benefits apply. Ref: C1063

**SYSTEMS PROGRAMMERS MIDDX £13,000+**  
Ideally the successful applicant will have at least 3 years' MVS/JES2 COBOL experience together with the ability to provide support for all production problems. Ref: B1081

**TANDEM PROGRAMMER LONDON c.£13,000**  
This major Software House needs a Programmer with 2 years' TANDEM experience using either COBOL or TAL to assist in the development of commercial or scientific applications. Ref: D1184

**DATABASE ADMINISTRATOR BUCKS £13,500**  
(ANY MAINFRAME)  
The ideal applicant for this international medical research company will have created and implemented database systems of different sizes and will assist in the management of their Services Team within an HP 3000 environment. Candidates with any MAINFRAME background may apply. Excellent remuneration plus paid overtime. Ref: D1126

**DEC SOFTWARE SYSTEMS ENGINEERS to £13,000+Relocation**  
Our clients, based in London and Surrey require people with at least 2 years' DEC RSTS and/or VMS/RX11M, ideally with a knowledge of MICRO COMPUTERS. Many attractive company benefits are offered, including a PROFIT SHARE scheme and RELOCATION where necessary. Ref: E1228

**ANALYST/PROGRAMMERS LONDON to £13,000**  
This commercial organisation needs Analyst/Programmers with 3 years' FORTRAN experience, preferably with DEC RSX11 or VAX/VMS expertise. Excellent benefits include a company profit sharing scheme. Ref: E1218

**ANALYST/PROGRAMMERS MIDDX to £12,500**  
Large commercial organisation is seeking Analyst/Programmers with 2 years' PL1 or COBOL to join their existing systems development group, and working closely with clients, and group information services staff in a technical business environment. A knowledge of CICS and IMS (or IDMS) would be a distinct advantage. Excellent career path and benefits apply. Ref: D1084

**SYSTEMS INSTRUCTORS LONDON/MIDDX £12,000+**  
This well-known organisation, highly skilled in the training of all levels of development personnel, is seeking two talented Analysts with communicative skills, to impart the knowledge, techniques and disciplines of Systems Analysis. A programming background is also an important attribute for these challenging and responsible positions. Ref: C1237

**DEC VAX PROGRAMMER LONDON £12,000**  
Our clients, an international manufacturing organisation is seeking someone with a minimum of 12 months' DEC VAX/COBOL experience to work on the development and implementation of financial applications. Excellent career path and benefits apply. Ref: E1217

**FORTRAN PROGRAMMERS BERKS to £12,000**  
Programmers with at least 1-2 years' FORTRAN experience, preferably having worked with DEC/VAX or PRIME are required by our client to work on now development projects for their Management Information Services. Excellent company benefits apply. Ref: E1219

**PL1 PROGRAMMERS & ANALYST/PROGRAMMERS to £12,000+Benefits**  
A number of our clients situated in Middlesex, Surrey, London, Berks and Bucks need Programmers and Analyst/Programmers with a minimum of 12 months' PL1 experience working in IBM DOS/VSE and MVS environments. Application areas include development of commercial and insurance systems. Benefits range from MORTGAGE facilities, Medical Insurance, Subsidised meals, etc. Ref: C1241

**DEC PROGRAMMERS BUCKS to £12,000**  
Our client, an expanding International Software House, needs Programmers and Programmer/Analysts to complement their existing teams. The successful applicants will have commercial applications experience gained within a DEC RSX11 environment using BASIC+2. Excellent working conditions and career path apply. Ref: D1083

**DEC PROGRAMMER LONDON c.£11,500**  
Our client is seeking someone with at least 3 years' COBOL experience, with familiarity of real-time applications. Excellent career path into Analysis is guaranteed. Ref: B1110

**PROGRAMMERS HANTS £10,500+PROFIT SHARE+MORTGAGE**  
Major financial organisation needs Programmers with 1-2 years' COBOL and/or FORTRAN experience to work on major new commercial projects, in a UNIVAC 1100 environment. Knowledge of Jackson's Structured Programming (or similar) would be added advantage. Excellent benefits package includes PROFIT SHARE scheme, subsidised MORTGAGE facilities, NC Pension, etc. Ref: C1225

**PROGRAMMER LONDON to £10,500+Relocation**  
Major insurance company needs a Programmer with 12 months' PL1 experience to work on major new projects in an IBM DOS/VSE, VM, TOTAL environment. A knowledge of MINIS would be useful, eg. WANG although training will be given, as the company moves towards "new technology" systems. Ref: D1280

**6 MONTHS RPG3 KENT c.£10,500**  
Large financial consortium is seeking an ANALYST/PROGRAMMER with at least 6 months' RPG3 experience. Familiarity with Financial/Insurance applications is preferred, together with ability to liaise at User level. Many attractive benefits are offered. Ref: B1267

**HONEYWELL PROGRAMMERS LONDON £10,000+**  
Leading financial organisation requires Programmers with 18 months' COBOL experience, ideally gained on HONEYWELL Level 64 or 66 hardware. Excellent working conditions and benefits include MORTGAGE, BONUS, etc. Ref: B1268

**IBM PROGRAMMERS SURREY c.£10,000+Benefits**  
18 months' IBM COBOL is required for this international manufacturing organisation. Successful applicants will be assigned to the development of major new projects on an IBM 3033 mainframe using MVS. A knowledge of IDMS would be an advantage. A structured career path together with FREE LIFE ASSURANCE, and BUPA apply. Ref: A1107

**ICL PROGRAMMER SURREY £10,000**  
Leading Software House is looking for someone with 3 years' ICL COBOL experience, preferably with TME and TP experience. A knowledge of MICRO COMPUTERS would be useful. Excellent career prospects and good company benefits apply. Ref: E1247

## OPERATIONS

**TECHNICAL SUPPORT/OPERATIONS MANAGER c.£16,000+Car**  
Our client based in Surrey, is seeking someone with a minimum of 4 years' DOS/VSE, CICS experience together with management skills to take combined control of the day-to-day running of the Operations and Technical Support departments. This position would ideally suit a Systems Programmer seeking to further their career in management. Excellent salary and company benefits are offered in return. Ref: A1248

**DEPUTY OPERATIONS SUPERVISOR LONDON £10,000+**  
Our client is seeking to recruit someone with a sound knowledge of DME and VME Operating Systems. The ideal applicant must currently be in a supervisory position together with familiarity of SCL Data and Network Control. Excellent benefits include MORTGAGE, BONUS, etc. Ref: A1262

**ICL OPERATOR (2 shifts) CITY c.£7,500**  
Our client, a leading international financial organisation requires an Operator with approximately 18 months' VME/B experience. Excellent prospects and benefits are offered. Ref: A1244

**JUNIOR IBM OPERATOR SURREY to £7,000**  
A minimum of 12 months' DOS/VSE, CICS experience is required to this expanding 4341 installation. Excellent career path and benefits apply. Ref: A1249

**DATA CONTROL CLERKS LONDON/SURREY to £7,000**  
Two of our clients are seeking Data Controllers, with a minimum of 2 years' experience, for their expanding divisions. Excellent career paths apply in both cases, together with good company benefits. Ref: B1269

**SYSTEMS PROGRAMMERS UK/ABROAD £25,000+**  
An international Software House needs highly motivated D.P. professionals for exciting new customer support projects at home and abroad. Applicants must have 3 years' systems programming experience with a sound technical background of MVS/JES, CICS and other associated IBM software. The company is offering an excellent remuneration package together with outstanding career progression. Ref: A960

**SENIOR ANALYST/PROGRAMMER LONDON to £18,000**  
Major Software House needs a Senior Analyst/Programmer capable of leading projects in the field of insurance applications. Experience of COBOL/RPG plus IBM/WANG background is preferred. Excellent prospects and benefits apply. Ref: C1027

**CICS SYSTEMS PROGRAMMER SUSSEX c.£17,000+Mortgage**  
Leading financial organisation requires someone with a minimum of 3 years' IBM ASSEMBLER/CICS experience for their OS/VS1 installation. The successful applicant will be involved in the planning and installation of the Operating System/Program Products and T.P. networking. A structured career path and a full remuneration package are offered. Ref: A1041

**SYSTEMS PROGRAMMERS LONDON/HOME COUNTIES to £16,500+Car**  
Our clients, one of the largest independent software support companies in the UK are currently seeking Systems Programmers with a sound working knowledge of MVS/JES2 or DOS/VSE/CICS, ASSEMBLER. Excellent benefits include BUPA, health insurance and paid overtime. Ref: D1179

**ANALYST/PROGRAMMER HERTS to £16,000**  
Our clients are seeking someone with at least 2 years' COBOL experience to be involved with the maintenance of existing systems together with the development of new packages, working on their H.P. 3000 range. Excellent salary and working conditions apply. Ref: B1188

**CONSULTANTS (ALL LEVELS) LONDON to £15,000+Car**  
Ideally the applicant will have up to 10 years' DP experience together with a knowledge of minis, micros and mainframes, together with financial and business type systems, dealing with clients on a level from small businesses to multi-national organisations. Ref: D1182

**DEC ANALYST LONDON c.£14,500+Bonus**  
Our clients, a major financial organisation are seeking an Analyst with at least 2 years' background, preferably with on-line Real Time experience. Familiarity with VAX/VMS and CHAPS is preferred. An excellent salary, benefits and conditions of employment are offered. Ref: B1100

**(BUSINESS) SYSTEMS ANALYSTS MIDDX £14,000**  
Expanding Software organisation needs Business Analysts with commercial applications experience and sound MINI background eg. HP, DG, DEC, etc. These positions would ideally suit someone wishing to gain plenty of client involvement and exposure to a wide variety of application areas. Vacancies also exist for Systems Analysts with real-time experience, preferably with a DEC/VAX background. Ref: C1063

**NEW MIDDLESEX-BASED COMPUTER CENTRE IBM 3083-MVS/JES2, TSO/SPF, CICS and IDMS urgently needs the following D.P. professionals:-**

POSITION	COBOL	BAL	CICS	IBM O.S. (MVS PREF)	DATABASE (IDMS PREF)	SALARIES £
Senior Analyst Programmers	✓	useful	✓	any	any	£13,500
Senior Business Analysts	✓	useful	✓	any	any	£13,500
Analyst/Programmers	✓	useful	✓	any	any	£12,000
Analyst/Programmers	useful	✓	✓	any	any	£12,000

Superb prospects and benefits apply to this large International Financial Organisation. Ref: C1062

**IBM ANALYST/PROGRAMMERS SURREY to £13,000+Benefits**  
Our client, an international manufacturing organisation requires D.P. professionals with a minimum of 2 years' MVS/COBOL. Successful applicants will be assigned to the development of major new systems using the latest online and database techniques. Full RELOCATION, BUPA AND FREE LIFE ASSURANCE are just some of the many benefits offered. Ref: A1108

**SYSTEMS ANALYSTS HERTS c.£13,000**  
Leading manufacturing organisation requires someone with 2-3 years' Analysts expertise, together with COBOL/CICS, to assist in the implementation of new online design packages. Ref: B1166

**WANG PROGRAMMER/(ANALYSTS) LONDON to £13,000**  
This Software House needs Programmers and Analysts Programmers to take leading roles in the development of major commercial applications. Experience of COBOL or BASIC 2 is essential. Knowledge of WANG equipment is a plus. Ref: C1291

**COBOL/CICS PROGRAMMERS LONDON/HOME COUNTIES to £13,000**  
A leading software organisation requires IBM COBOL Programmers to meet their expanding client's requirements. A working knowledge of CICS or DL1 is essential, as is the ability to communicate at senior and User level. A structured career path through to Systems/Consultancy status is guaranteed. Ref: D1064

**DEC PROGRAMMER/ANALYST LONDON c.£12,500**  
Leading financial consortium requires someone to assist on major new projects, preferably with financial applications expertise. A sound working knowledge of VAX/COBOL is essential. Ref: B1086

**FORTRAN SPECIALISTS LONDON/HOME COUNTIES c.£11,500+**  
Programmers are required to join existing development teams to work on a wide variety of applications including scientific, research, engineering and commercial projects using minis and mainframes, including DEC, HP, DG, etc. Excellent prospects for career advancement into analysis and design. Ref: C996

**COBOL PROGRAMMERS ESSEX to £11,500**  
A leading manufacturing organisation requires IBM COBOL Programmers for major new on-line development work. A working knowledge of CICS/DL1 would be advantageous. Benefits include FLEXTIME, five weeks' holiday etc. Ref: B1180

**ANALYST/PROGRAMMER KENT c.£11,000**  
Leading financial organisation is seeking someone preferably with an ICL background, to assist in the conversion of applications from DME to VME/B. COBOL is essential as the ability to liaise at senior level. Excellent company benefits apply. Ref: B1205

**ICL PROGRAMMERS HERTS to £11,000**  
Our client needs Programming staff to join their existing development teams to work on a wide variety of applications within a commercial environment. Working knowledge of ME29 and/or DRS 20 range COBOL is essential. Excellent benefits and working conditions apply. Ref: D1128

**VME/B PROGRAMMERS SURREY c.£10,500+Mortgage**  
Major financial organisation requires people with at least 18 months' ICL COBOL, VME/B experience to join their existing project teams currently developing major Insurance applications on their ICL mainframe. A knowledge of IDMS and/or TPMS is preferred, although training will be given. The company is offering a wide range of benefits together with outstanding career progression. Ref: A1116

**SENIOR ANALYST/PROGRAMMER SURREY c.£10,000+Car+Bonuses**  
Our client, a leading Software House is seeking someone to help develop in-house accounting packages on their PRIME MINIS using FORTRAN. The successful applicant will have a working knowledge of computerised accounting systems together with a proven record in prepost sales support. This position offers an excellent remuneration package together with outstanding career progression. Ref: A1127

**RPG2 PROGRAMMER SURREY £10,000+Car**  
Our clients are seeking someone with at least 2 years' experience preferably gained from an IBM System/34 installation. A working knowledge of DPU is essential. Excellent working conditions and benefits apply. Ref: B1139

**TRAIN IN RPG3 LONDON c.£10,000**  
If you have at least two years' RPG2 experience our clients, a leading Computer Bureau will train you on their recently installed IBM System/38. The ability to liaise with Users together with a strong personality are essential. Ref: B1140

**PROGRAMMER and PROG/ANALYST BERKS to £10,000**  
Our clients are seeking a Programmer and Programmer/Analyst with 1-2 years' COBOL experience gained within a commercial environment, to assist in major new development projects. Both positions offer a variety of applications work, involving occasional overseas travel. Ref: D1186

**JUNIOR DATABUS PROGRAMMER HERTS £8,000+Benefits**  
Leading manufacturing company requires someone with up to 18 months' DATABUS experience to join their dynamic Team. The successful applicant will be developing new on line commercial systems and will also gain exposure to IBM 4300 hardware and software facilities. Excellent promotion prospects. Ref: A1061

## OPERATIONS

**IBM OPERATIONS CONTROLLER LONDON £14,500**  
The ideal applicant will have a minimum of 5 years' experience, aged 28 years' + together with good supervisory skills. Working knowledge of DOS/VSE, CICS, VM is essential. Ref: B1089

**MVS OPERATIONS - ALL LEVELS MIDDX to £14,500+Benefits**  
Major new IBM site running under MVS/JES2, CICS, VTAM and IDMS, needs Operations staff at all levels. Requirements include Operator to Shift Leader level, Production Control and Technical Support staff. Excellent prospects and benefits apply. Ref: C1196

**MVS SENIOR OPERATOR W. COUNTRY to £13,000+relocation**  
Our client, a leading Finance House requires someone with a minimum of 2 years' MVS/JES2 experience, and a sound technical knowledge of JCL, IMS DB/DC, together with leadership qualities. BUPA and PROFIT SHARE are just some of the benefits offered. Ref: A1176

**DOS OPERATORS ESSEX/LONDON/SURREY to £11,000+mortgage**  
Two financial organisations and a large retail company need Operators with 2-3 years' IBM DOS/VSE CICS, and VSAM, to work within 2 and 3 shift environments. Excellent prospects and benefits apply to these positions. Ref: C1206

**DEC VAX OPERATORS (ALL LEVELS) HERTS to £9,000**  
Leading commercial organisation requires people with a minimum of 18 months' DEC VAX/VMS experience for their expanding Operations Division. Sound technical knowledge together with proven supervisory skills are essential for the senior posts. A well defined career path together with many company benefits are offered. Ref: A1204

**ICL OPERATORS LONDON to £8,500+Benefits**  
This well-known international manufacturing company is currently seeking to recruit ICL VME/B or DME Operators with at least 2 years' experience. Excellent benefits and career prospects apply. Ref: D1120

**IBM OPERATOR MIDDX to £8,000**  
A leading manufacturing organisation is seeking an Operator with a minimum of 12 months' experience of VM OS/VS1 together with a working knowledge of CICS. Usual large company benefits apply. Ref: D1081



**BUICK COMPUTER SERVICES**  
RECRUITMENT DIVISION  
72 Rochester Row  
Victoria London SW1P 1JU

**Tel: 01-834 0061 (24-hours)**  
Or call evenings and weekends  
Ref. A: 01-318 2700  
Ref. B: 01-794 5837  
Ref. C: 01-842 1178  
Ref. D: 01-387 2152  
Ref. E: 01-821 9554

The above vacancies are only a token selection taken from our current files, and we are always pleased to hear from computer professionals wishing to further their career objectives.



**BUICK COMPUTER SERVICES**  
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72 Rochester Row  
Victoria London SW1P 1JU

**Tel: 01-834 0061 (24-hours)**  
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Ref. D: 01-387 2152

The above vacancies are only a token selection taken from our current files, and we are always pleased to hear from computer professionals wishing to further their career objectives.

## WARWICK WOODWARD NEED AN ADDITIONAL RECRUITMENT CONSULTANT

Warwick Woodward is considered to be among the UK's most successful and professional recruitment consultancies. Our client and applicant testimonials speak volumes for our service to the industry.

We now need an additional recruitment consultant to help us continue with our expansion rate. We are not looking for paper shufflers or flashy sales people but would like to find the right person to dovetail with our existing team of experienced consultants.

The likely applicants would be able to demonstrate either a successful background in recruitment or they may be working in DP with a strong desire to move into this highly specialised field.

As background information, you will be interested to learn that Warwick Woodward is part of the flourishing Span Group of Companies whose other member companies are listed as follows:-

### Span Computer Contracts

Providing contract support in all areas of DP.

### Taurus Technology

Leading edge training and consultancy specialists in UNIX, C and Ada.

### Structured Methods

Training, consultancy and project management in the structured methodology approach.

### Computergeneral

A business systems house for the first time user.

### Span Australia

A subsidiary based in Sydney marketing all the group's services.

### Windmill Advertising

An advertising agency which produced this and all the group's advertisements.

The Successful applicant will be well rewarded both financially and in terms of job satisfaction. We expect the sort of performance that comes with maturity (not necessarily in years), sales ability, the gift of ideas and the desire to help others plan their career or their staffing requirements.

If you feel you have a positive contribution to make to Warwick Woodward you should talk to Janet Chilvers our manager on 01-734 7394 during working hours or on 01-241 3341 evenings and weekends.

**WARWICK  
WOODWARD**  A SPAN GROUP COMPANY

43-44 GREAT WINDMILL STREET, LONDON W1V 7PA  
TELEPHONE: 01-734 7394 24 HOUR ANSWERPHONE

## DALROTH

EXISTING STAFF EARNINGS EXCEED £20,000

(Existing staff earnings exceed £20,000)

SyncSort Technology Limited, with their headquarters in Berkshire, market and support their own products in the UK and Europe. The Company have an established and satisfied customer base for the MVS, VS1, DOS and CMS software products and currently have two vacancies.

For both positions the successful applicants will have a background in any of the following:

- ★ Systems Programming/Systems Engineering
- ★ Systems Support/Operations Support
- ★ Assembler Programming

and ideally experience in OS, DOS and VM/CMS or MVS.

The Company is willing to consider a negotiable package to suit the right individual, and will of course offer full training in their products, both in Europe and the USA.

For further information please write to Dalroth and Partners, 4 Half Moon Street, London W1Y 7RA, quoting ref. 5031, or telephone Ian Murray West day, 01-493 2947, 8am-10pm, or Graham Cottingham, daytime Reading (0734) 478445, evenings (0734) 474129.

DALROTH & PARTNERS LTD, 4 HALF MOON STREET, LONDON, W1. Tel: 01-493 2947

### PROGRAMMING & SYSTEMS LTD

#### PROGRAMMERS

IBM, MANTIS	621 JM
DEC PDP 1124, RMS, MACRO	632 JM
IBM, BAL, CICS	629 JM
ICL 2900, COBOL, VME	617 JM
HONEYWELL DPS4/DPS8, COBOL	601 JM
HEWLETT PACKARD 3000, RAPID	554 JM
VAX, COBOL, FORTRAN, RMS	591 JM
IBM 8100, COBOL, DPPX, DPMX	609 JM
IBM 4300, ASSEMBLER, DOS, VSE, VM, CMS	639 NL
HP 200 Series, Experience of Survey packages	637 NL
IBM, COBOL, IMS, ADF	593 NL

#### ANALYST PROGRAMMER

IBM, COBOL, CICS, MVS	625 JM
IBM, PL1, CICS, MVS	434 JM
IBM SYSTEM 38, RPG3	641 JM
IBM, PL1, IMS, DB/DC, TSO/SPF	615 JM
VAX, INFO, URGENT	613 NL

#### ANALYST

IBM, DATABASE, IMS	633 NL
--------------------	--------

#### SYSTEM PROGRAMMER

IBM, MVS, CICS	622 NL
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#### JUNIOR PROGRAMMERS

ICL 2900, COBOL, SCL	636 NL
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For further information please ring (02403) 22201  
or send a full cv to HPSL Plymouth House  
7 London Road, Amersham, Bucks HP7 0HE

THE HUNTERSKILL GROUP

## Scientific & Technical

### Software Engineers

to £14K + Benefits

#### Herts.

Multinational company dedicated to the development of Office Automation Products seeks Engineers with 2 years + experience. You will have been working in an electronic/engineering environment developing MICROPROCESSOR SOFTWARE. Knowledge of INTEL, MOTOROLA, Z80 and 8085 ASSEMBLER is a distinct advantage.

### Banking Consultants (to Sen. Level)

to £17K + Bonus

#### City

One of the most highly regarded consultancies in the Banking/Financial sector seeks high calibre Consultants to design and develop Banking Systems. You will have 2 years + relevant experience ideally in an IBM, DEC or TANDEM environment.

### Simulation Systems

to £15K

#### City

International Software House seeks SOFTWARE ENGINEERS and DESIGNERS to develop simulation systems. You will have

two years experience of High Level Structured Languages, with UNIX and C being an advantage

### Communications Experience

£8-16K

#### All Areas

Upwards of 12 months experience on Communications Systems is sought by a large number of our clients in the Financial Scientific and Defence Sectors of the market. Knowledge of High Level Structured Languages on hardware such as DEC PDP's, VAX, INTEL, MOTOROLA is required.

### Analyst/Programmers

to £12K

#### West End

2 years + FORTRAN in an electronic/engineering environment to work on CAD/CAM projects. Ability to work independently and CAD background is essential to work for this prestigious software house.

Several requirements for Programmers from a Technical/Scientific environment. Any experience considered.

For all the above vacancies ring: SHIVON RIORDAN, Day: 01-630 1433  
Evening: 01-670 8717

**Lorien**  
COMPUTER SERVICES LTD.  
*We've got it!*

First Floor, Greencoat House, Francis Street,  
London SW1P 1DH. 01-630 1433

## WEST MIDLAND OPPORTUNITIES

### COMPUTER MANUFACTURER CUSTOMER

#### SUPPORT EXECUTIVES

£12-£15,000 + Car

Retained by several leading manufacturers who seek support expertise in one or more of the following areas: Financial, Manufacturing, Office Automation or Transaction Processing.

### SYSTEMS MANAGER/TEAM LEADER

c. £12,000

An ideal opportunity for a Senior Systems Analyst/Project Leader to manage a team utilising the latest in IBM Hardware.

### DP CONSULTANTS

c. £15,000 + Car

Our client requires a Manager capable of leading to successful completion a number of major Database projects.

### TECHNICAL MANAGER

Up to £16,000 + Car

Required for a software house to manage a small team of IBM professionals supporting APL, MVS/TSO, and VM/SP.

### PROJECT MANAGER

To £15,000 + Car

Our client requires a Manager capable of leading to successful completion a number of major Database projects.

### SENIOR ANALYST/PROGRAMMER

£10,000 + Car + Perks

A leading software house requires a strong RPGII or RPGIII background to work on a range of commercial and manufacturing systems projects.

### COPICS ANALYST

£11,000 + Car

A leading IBM user requires successful implementation of MRP.

### SYSTEMS ANALYSTS

C. £11,000 + Car

Retained by several successful Midland mainframe users for an excellent variety of commercial business systems.

### DEC VAX SPECIALISTS

To £12,000

A major consultancy requires in-depth BASIC/COBOL gained on VAX together with proven Systems experience.

### PROJECT LEADER

£11,500

This position would suit a Senior Systems Analyst with sound man management and systems knowledge.

### ANALYST/PROGRAMMERS

£10,000 + Car All. + Bonus

A leading Midlands software house requires strong ICL or IBM or any strong Mini background; particularly OMAC or Q PAC exposure would be welcomed.

### ANALYST/PROGRAMMERS

To £10,000 + Benefits

We require experienced BASIC Programmers for a number of software houses and user companies.

### PROGRAMMER/ANALYST

£8,500

A well-established centrally based installation requires strong IBM COBOL or INTERACTIVE MINI COBOL to develop into systems.

### RPGII PROGRAMMER TO LEARN RPGIII

£8,000

Genuine opportunity for a young IBM SYSTEM 34 Programmer to take advantage of System 38 training.

### PROGRAMMERS

£7,500-£8,000

Ideal move to utilise two years' COBOL experience at this prestigious modern user mixing mainframe and mini hardware.

MITCHELL KEYTE & ASSOCIATES LTD

SELECTION AND BRANCH CONSULTANTS

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# U.S.A. MAPPER UNIVAC 1100

## System Co-Ordinators — Run Writers

If you've used it, you'll appreciate it, but where is your career leading you in 1984?

Consider this: join a major US Consultancy and work with the experts.

You will have a minimum of six months' experience and be familiar with ECL and Mapper transaction, rather than function.

The above combined with a spirit of adventure plus the desire to enhance your existing skills will provide a 'not to be missed' opportunity.

In addition to competitive US salaries, our client offers an excellent relocation package, free return flights and all the benefits of any major US company (including comprehensive insurance cover).

Full 'H' Visas will be provided and start dates are envisaged to be January/February 1984.

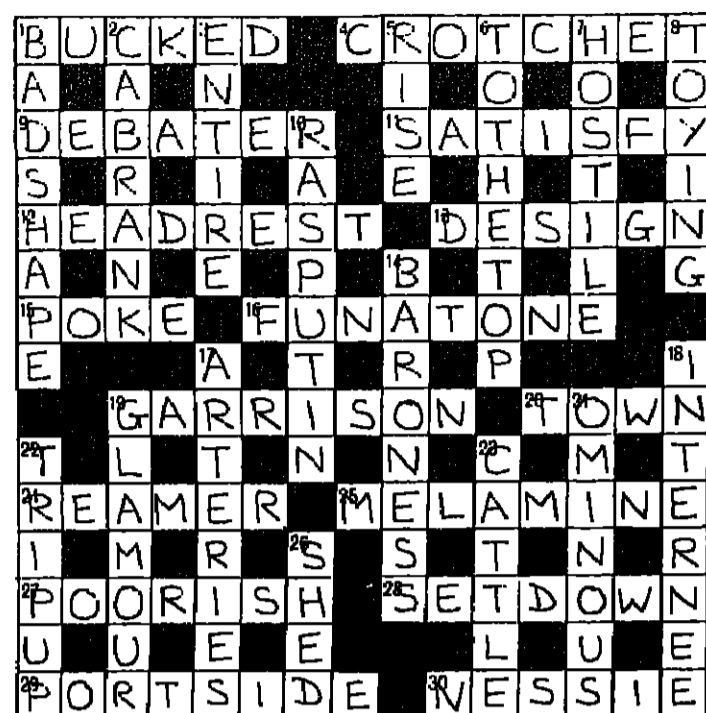
For more details and an insight into working in the USA, ring Janet Chilvers or Kay Williamson on 01-734 7394 or Janet Chilvers on 01-241 3341 evenings and weekends.

**WARWICK  
WOODWARD**  A SPAN GROUP COMPANY

43-44 GREAT WINDMILL STREET, LONDON W1V 7PA  
TELEPHONE: 01-734 7394 24 HOUR ANSWERPHONE

## CROSSWORD

Solution to Prize Crossword No 46



This month's first prize of £10 has been won by Tim Hopkins, lecturer in computer science at the University of Kent, Canterbury. Prizes of £5 each are on their way to Alan Chaplin, a systems analyst at the DHSS in Newcastle Upon Tyne; and Dr David Flower, mathematical modeller at the Cement and Concrete Association, near Slough.

LONDON SCHOOL OF ECONOMICS  
COMPUTER SERVICE

## VAX/VMS SUPPORT PROGRAMMER

The school has recently installed a large dual VAX 11/780 computer system operating under VMS, together with around 100 disc based colour workstations. A high speed local area network is planned for 1984, and a wide range of applications software and languages is to be made available with particular emphasis being placed on the development of an integrated software environment centred on the use of database graphics and other software tools.

Applications are invited for the post of Support Programmer in the computer service. The successful applicant will be involved in a variety of systems and application software projects in support of the development of the VAX service.

Applicants will be expected to have a good Honours Degree in a computer-based discipline. Salary according to age and experience will be in the range £7,400-£12,000. Application forms returnable by 8th December 1983 may be obtained from the Personnel Department, LSE, Houghton Street, London WC2A 8AE. Telephone 01-44 4765. (8740)

SENIOR ANALYST  
PROGRAMMERS

Central London

Salary package to £14,000

Fraser Williams (Commercial Systems) is recruiting two senior analyst programmers to join support and development teams working on a range of package and bespoke systems.

You should have a minimum of four years' commercial systems experience and ideally be familiar with Data General computers and business Basic; experience with property systems is also desirable.

These positions offer excellent career prospects and varied work in a fast growing company within the Fraser Williams Group.

Please contact John Wright on 01-834 4041 or send your cv to:

**Fraser Williams**  
(Commercial Systems) Ltd,  
Landseer House, 19 Charing Cross Road  
London WC2H 0ES

(8737)

## Freelance Assignments

We need professional contractors to work in teams on  
Link Associates' Managed Projects.  
Several locations, London/Hornie Counties.

PL/1

- ★ Designers
- ★ Analyst/Programmers
- ★ Senior Programmers
- ★ Programmers

With combinations of:  
DL/1, CICS  
DOS or MVS  
JSP

These assignments start over the next six weeks.  
Please contact me NOW regardless of availability.

Please ring: Sheila Fox  
Link Associates Limited  
24a High Street, Chesham, Bucks. (0494) 784922

Sales Executives  
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Micro & Mini  
Sheffield, Birmingham, Croydon.

- ★ Basic £10K
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- ★ Commission



Contact: Roger Cooke  
Rondure Computer Systems Ltd  
Computer House  
Road End Road,  
Oldbury, Walsley,  
West Midlands B68 8SF  
Tel: 021-552 3092

## THE LAW SOCIETY

## Production Controller

£7,919-£10,353 p.a. (including London Weighting)

The Law Society is responsible for the administration of the Legal Aid and Advice Scheme on behalf of the Government. To assist in carrying out this task it has a SPERRY UNIVAC 9840 Mainframe installed in Central London and Micro-Processors are being installed in 15 Area Offices throughout England and Wales.

We now require a Production Controller who will be responsible for the day-to-day running of Computer Operations including Data Control. Applicants must have considerable experience at a senior level in computer operation including staff management and at least two years' experience of an OS/3 system environment. Starting salary will be related to age and experience.



Requests for application forms should be addressed to the Personnel Officer, The Law Society, Greener House, 12 Roger Street, London WC1N 2JJ.

(6726)

TECHNICAL  
SOFTWARE/PROGRAMMING

Salary £9,000-£11,000

Our client is in the forefront of computer technology and is among the leaders in this field of advanced engineering applications.

Here is an opportunity for you to help expand the frontiers of new technologies. A number of exciting vacancies exist for Software Engineers/Programmers at various levels, who are keen to take this important step forward.

Ideally, applicants should be graduates in Computer Science, Mathematics or a relevant subject, with at least two years' experience in engineering applications on IBM mainframe machines using FORTRAN/ISO SFP.

This well-established company offers excellent prospects. Relocation expenses will be paid where appropriate.

Write or telephone for an application form quoting reference 20/5F.

**AMES PERSONNEL**  
6 CHART WAY, REIGATE, SURREY, RH2 0NZ  
TELEPHONE: REIGATE (07572) 22219 or 22210

(6726)

EAST LOTHIAN DISTRICT COUNCIL  
Department of FinanceCOMPUTER  
MANAGER

(Salary £11,200-£12,100)

Early in 1984 the district council will upgrade their existing computer facilities with the installation of a new system. A number of financial applications are already on computer and it is intended to develop a full range of financial applications in the near future.

The new post of Computer Manager will be responsible to the Director of Finance for advising on the strategic development and implementation of all applications, working closely with various council departments, together with control of the existing computer operations section.

Applicants should have had around three years' programming experience, preferably in PL/1, but at least two years' experience in systems design experience, preferably on financial applications. The successful candidate will be required to have proven ability to communicate well, to be of staff and user departments. Local authority experience, though not essential, would be an advantage.

Applicants should send their applications to the Personnel Officer, Council Offices, 100 High Street, Haddington, East Lothian, Scotland, EH46 1JH, to whom completed forms should be returned by 15th December 1983. Candidates will be invited for an interview and shortlisted candidates will be invited to attend an interview.

(6726)

## SALES BIT

Quality of Management - 74

How to make  
an appointment  
by telephone

MAKING appointments is an essential part of any salesman's life, no matter what his product, and while someone selling supercomputers has less involvement in fixing sales calls than the typical computer supplies salesman, the need for effective skills in securing appointments to meet decision makers and decision influencers is of equal importance to any type of salesperson operating within any marketplace.

Many salespeople experience difficulties in securing appointments, which usually means they have trouble with their use of the telephone. In most cases this is due to insufficient self-confidence and the absence of an effective technique when attempting to gain commitment over the telephone.

When telephoning to secure an interview with a prospective buyer it is essential to sell the appointment, not the product. Some would argue that the same call can be used for qualifying the potential of the prospect, but I disagree. In most cases it is possible to qualify the potential of a company by means other than via the decision maker (the telephone operator, trade directories, etc.) so why run the risk of being drawn into the sterile situation of attempting to sell or describe an unseen product to someone you do not know.

All you need to discuss over the telephone is which day and at what time a meeting can take place. Don't get drawn into providing product information once the buyer has agreed to make an appointment. There is no better way of having an appointment cancelled almost as soon as it is made.

A considerable factor in the buyer's willingness to see the salesman is curiosity. Once this has been even partially satisfied by verbal description he is likely to change his mind.

So you are actually calling to close a sale, ie, selling the appointment. Therefore, you are in telemarketing mode which means you must work to a pre-determined plan, work efficiently, close the sale and ring off.

A planned presentation is most important. It must contain an opening statement that will gain the buyer's attention: "Good morning Mr Prospect. My name is John Salesman of Ideal Computer Supplies. Your group managing director suggested I make contact with you."

This must be followed by a justification for the proposed meeting: "We have been able to reduce the expenditure on computer consumables for many similar clients to yourself by as much as 50%, and I would like to come and discuss the ways we could do the same for you."

Then comes the request for an appointment (of which, more later) and a terminating statement such as "Goodbye".

Brevity is the key. Once a time and place has been agreed the call should be concluded immediately. Efficient organisation is absolutely essential. Simply locating a name in a directory is an ineffective and risky business. Lists should be compiled according to geographic location to allow efficient journey planning. Other information such as name of contact, telephone number, most likely area of products interest, possible application areas, etc, can make the process much easier to control and also provides a useful list for future reference.

So much for organisation; now back to the call itself. Having made an opening statement that is likely to gain the buyer's attention and justified the reason for meeting, it is necessary to gain his

agreement. This is usually achieved by the use of an open close - the offer of alternative that assume acceptance.

"I was hoping to be able to see you next week, or would you prefer for the following week?"

"Fine. Which is easiest for you: the beginning or end of the week?"

"No problem. Shall we make it Thursday or Friday?"

"A.m. or p.m.?"

"Straight after lunch or is it better for you at the end of the day?"

"What about 2.30pm?"

"I look forward to meeting you then. Goodbye."

It's up to you to decide how far along the optional path you wish to go.

It would be naive to assume that telephone prospecting will not meet with any resistance if an effective selling technique is applied. There is sales resistance throughout the selling cycle and the salesman has to be ready for it at all times. Often it is justified because the product is wholly inappropriate. But sales resistance occurs more frequently because the sales approach is entirely wrong and/or the salesman does not have the right answers when objections are raised.

I don't want to get into a debate about the validity of sales objections; but it must always be remembered that so-called sales objections are usually requests for more information.

Therefore it makes a lot of sense to list all the usual, and even the not so usual, objections together with replies that have been proved by experience to provide a satisfactory answer to the questions of potential buyers while at the same time sustaining their interest.

Whatever happens, objections cannot be ignored whether they occur over the telephone or face-to-face. They must either be answered, or at least set aside: "That is a very important point that almost without exception was raised with our existing users when we first contacted them. It is a question that demands a detailed explanation which I will certainly want to give you when we meet."

This must be followed by another attempt then to close the sale of the appointment. Thus, once you have got the order, offer your thanks and say goodbye in no more than 10 seconds.

A further consideration that applies to most selling situations is the use of a well conceived, concise letter either to prepare the prospect for the call or to confirm the date, time and place of the appointment that has been made. I believe it does a lot for the personal credibility of the caller and increases his chances of gaining the buyer's agreement to meet.

Alan Williams

PUZZLE  
ANSWER

WE know that the convoy is travelling at 15 miles per hour. It is the constant speed of the dispatch rider, he will overtake the convoy at a rate of (x-15) mph, and pass it on the way back at a rate of (x+15) mph.

He takes one-tenth of an hour for the two journeys, so we can set up the equation

$$\frac{2}{x-15} + \frac{2}{x+15} = \frac{1}{10}$$

which gives us  $x^2 - 40x - 225 = 0$  or  $(x-45)(x+5) = 0$ . Therefore the dispatch rider's speed must be 45 mph.

# Throughput/Analyst

## c £8,500

Based in a beautiful area of rural Staffordshire, we are a highly successful Construction Group. So successful that in the last three years we have increased our turnover from £20m to £50m despite the recession in the industry.

We have always regarded computer based information systems as a vital component of our achievements to date and of our future development, and currently utilise a DEC PDP 11/34 with DIBOL programs operating under RSTS/E.

Because of the proposed expansion in both hardware and software, we now wish to recruit a Programmer/Analyst, probably in his/her mid to late 20's with experience of programming in an interactive language (BASIC would be ideal, but is not essential). Previous exposure to micros would be a distinct advantage, as would a knowledge of the construction industry.

We offer genuine prospects of advancement in a Company that is determined not to stand still. We fully intend to maintain and even improve our position in the industry.

For an immediate and confidential interview, please contact **Jim Mitchell** on **021-236 3781** (24 hour answering service) or **021-455 7653** (evenings and weekends to 9.00 p.m.).

Technical, Sales &amp; Management Appointments



Specialist Computer Recruitment Ltd

**SOUTH**  
James House, 46 James Street,  
London W1M 5HS  
01-935 0871/488 0481

**MIDLANDS & INTERNATIONAL**  
35-37 Great Charles Street,  
Queensway, Birmingham B3 3JY  
021-236 3781

**NORTH**  
International House, 84 Deansgate,  
Manchester M3 2ER  
061-833 0427

**BELGIUM**  
Avenue Louise 327,  
Boite 4, 1050 Bruxelles  
010 322-640 7151/71

**HOLLAND**  
Willemsparkweg 92,  
1071 H.M. Amsterdam  
010 3120-760947

# PRODUCT SUPPORT ENGINEERS

## Microcomputers

to £10,500 plus car Warwickshire based

Our Client, a major Computer Services Group, encompassing mainframe leasing, data processing, and microcomputer services, can demonstrate profitability, planned growth and an excellent record of service to its customers.

The introduction of the **IBM PC**, together with exclusive distributorship for key plug compatible IBM PC products, has made a significant contribution to an annual turnover in excess of £18 million.

Two Support Engineers are now required to operate out of new offices to provide pre- and post-sales technical support to distributors and their customers.

This role is best suited to an Electronics Technician with sound micro hardware and software experience who wishes to work in a dynamic sales environment. A Degree in computing/electronics or a relevant HND is desirable; this is not as important as sound practical experience and the ability to communicate effectively with non-technical personnel.

We can offer you an attractive income, and good career prospects in a dramatically expanding environment.

For further information, telephone **Trevor Money** on **021-236 3781** (24 hour answering service) or **021-448 1870** (evenings and weekends).

Technical, Sales &amp; Management Appointments



Specialist Computer Recruitment Ltd

**SOUTH**  
James House, 46 James Street,  
London W1M 5HS  
01-935 0871/488 0481

**MIDLANDS & INTERNATIONAL**  
35-37 Great Charles Street,  
Queensway, Birmingham B3 3JY  
021-236 3781

**NORTH**  
International House, 84 Deansgate,  
Manchester M3 2ER  
061-833 0427

**BELGIUM**  
Avenue Louise 327,  
Boite 4, 1050 Bruxelles  
010 322-640 7151/71

**HOLLAND**  
Willemsparkweg 92,  
1071 H.M. Amsterdam  
010 3120-760947